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HENRY MADISON KENDALL  
Editor



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# ANNALS of the Association of American Geographers

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Volume XLIV

SEPTEMBER, 1954

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## THE WAY LIES OPEN\*

J. RUSSELL WHITAKER

*George Peabody College for Teachers*

THIS meeting marks the close of the fiftieth anniversary of the Association of American Geographers. The high quality of papers and discussions at this conference is eloquent testimony to the substantial growth of our field and of our society since its initial meeting, which took place in this city in 1904. Much has been said regarding that first meeting and the developments since that time. I am sure we all feel the satisfaction that comes from seeing a task well done. We can say to ourselves, "This much has been accomplished. Here are landmarks to indicate the distance that we have traveled."

But the concern of the founders of this society was with the future of geography rather than with its past. They were confident that association around a common purpose would be rewarding, both for the development of the field and for the personal satisfactions that every scholar deserves—such as the pleasure of association with persons of like purposes, the thrill from mental tussle with worthy opponents, and the sense that one does not work alone.

There are men and women in this audience who can testify to the personal satisfactions that have come to them through this Association, not only during this week, but through ten, twenty, thirty, forty, and even fifty years; and all can read in the printed record the evidence of the role of this Association in the field of scholarship. Achievements have been substantial, and we rejoice in them and honor the men and women who have made them.

There are suitable times for pausing to take stock and to assess the need for reorientation of one's efforts. Such times come to all of us, provoked perhaps by changes within us, by external circumstances, or by both. This particular stock-taking is set by the calendar and by the habit men have of pausing at fifty-year intervals to check on the course they have taken. If the stock-taking so prompted coincides with a genuine rhythm in the life of the person or persons so much the better. I believe that this occasion does come at such a time for us, a time when North American geographers should take stock of the past and plan for the future.

\* Presidential address, delivered at the 50th annual meeting of the Association of American Geographers, Philadelphia, Pa., April 14, 1954.

The principal questions I would have you consider with me, then, are these three: What gains have been made in the fifty years since this society was founded? What are the principal needs for the future? What are the changes required to meet those needs?

## I

These fifty years have expanded our endeavor until now geographers occupy a wide range of useful positions. Little needs to be said here about that. Also impressive, as one assesses achievements to date, is the well-balanced, useful understanding that geographers now have of the scope of their work, as a result of long and sincere searching by a great number of scholars, both here and abroad.

One of the achievements of which geographers of this organization may rightly be proud has been this slow, sometimes painful, and even boring identification and elaboration of the various facets of their endeavor. Thanks to a succession of philosophical papers, and to several volumes prepared in part or whole by members of this organization, an apprentice geographer can now quickly discover the main outlines of his field.

As a result of the labors of our predecessors and associates, a broad, matured, and sharply effective system of thought guides our work. Never before has the range of operations been so wide and so challenging and the theoretical groundwork so well thought out.

To say, however, that a broad frame of reference for our field has been adequately delineated is to risk being misunderstood. Certainly one should keep an open mind for new ideas. There are still large aspects of the field that have not received adequate examination, gaps which others of this society will surely do their best to fill in the years ahead. My thesis is not that our philosophy may now be considered a closed system, but rather that it now has sufficient balance and direction to give each of us the comforting assurance, particularly as we set out as young geographers, that our own task fits into an evolving whole, that what we are doing will contribute to the work of men operating at different points throughout our field. I make this statement with confidence in part because of the publication of the volume, *American Geography, Inventory and Prospect*, the recent presidential address on population geography, and the maturity of the philosophical papers read at this meeting.

However, I would like to sound a warning prompted by a weakness long evident in the thinking of American geographers. Having arrived at a broad, challenging view of the scope of our field, we should resist most stoutly any effort to shrink it and impoverish it. Those of you who are familiar with the history of the efforts in North America to delimit our field realize that too commonly individual geographers have tried to force this broad field into the narrow frame set by their special aptitudes and interests. It has been difficult for some to define the field save as outlined in their own mental image. If leaders have avoided this pitfall, some of their followers have not succeeded in doing so, hence the succession of dogmas and shibboleths that has plagued us.

In the summer of 1921, a visiting geographer from England was distressed by the reception of his philosophy. Said he, "When I talk about man-earth relationships, my colleagues and students are enthusiastic, but I find no support for my interest in the distribution of things over the earth." Had he returned twenty years later, he would have found the reverse to be true in many quarters. Similarly, in the late 1920's one of America's most distinguished geographers visited a university where he spread consternation among members of the geography staff because he talked about topical geography and practical problems instead of regional geography and purely scientific work; but later that same university conferred on this man an honorary doctorate, citing as the basis for it his achievements in topical and applied geography!

The limited grasp of geographers and the haste to discard recently adopted ideas remind me of an incident told by a missionary who had just returned from Northern Rhodesia. In describing the changes that had resulted there from the introduction of maize, he told of a ripening cornfield that had been ravaged by wild animals. One morning it was found that ears of corn had been plucked and thrown on the ground all along between two of the rows. The next morning two more rows had been treated in the same way. The third night a watcher saw an old baboon come waddling out of one edge of the forest clearing, break off an ear of corn and tuck it under one arm, and then another and put it under the other arm. Then he broke off a third ear and in raising an arm to receive it, dropped the ear being held there and put the more recently plucked one in its place. In this fashion he ambled across the field, breaking off ear after ear, dropping one every time he raised his arm to tuck a fresh one in place. He disappeared into the woods with only two ears of corn.

If one has studied and digested the thinking of geographers for a half century, one surely has sufficient wisdom to see that both "distributions" and "relationships" matter; that changing conditions of the physical earth do "influence" man; that man does make "adjustments" to earth conditions; that the "content of area" does present a challenge to geographers; that, however much geographers are interested in the whole earth, they find it convenient to divide it into parts; that, however carefully they center their efforts on a subdivision of the earth, they fall short of their goal if they ignore its spatial relations with the rest of the earth; that geographers should have room in their thinking for both the uniqueness of every place and the oneness of the world. And so I might go on to identify values in many other ideas about which geographers have debated during the last fifty years.

A troubled hope entertained some thirty years or so ago was this, "Surely there must be more to geography than what we now have, something deeper, richer, more worthy of a scholar's wholehearted devotion." That vision of richness of thought is now a reality and need trouble one no longer. The challenge for the near future is not so much to expand our view of our common endeavor as to conserve it and to use it as a guide in substantive work. We shall want to revise its major parts and, as a consequence, refine the whole structure from time to time. We should encourage disagreements, but not discard ideas indiscriminantly. Rather, we should keep

what we have gained from home and abroad, steadfastly resisting any effort to narrow, impoverish, or distort it.

## II

And so we move from a consideration of the scope of the field of geography to its substance, particularly to the printed record of our work. I anticipate a *major* change in this regard. The years immediately ahead should see, not necessarily more devoted scholarship, but more concentrated, mature, productive scholarship.

Once upon a time a college geography professor called an undergraduate into his office. "What is your major?" he asked. "Why don't you concentrate on geography? One of the delights in geography is that you are never far from the unknown. There is an abundance of opportunity for research." And he might have added, "a necessity for research, if a geographer is to function with a scholar's conscience." Whether one be a geographer in a university position, a government employee, a teacher in a small college, a high school or elementary teacher, or even that rare person, a geographer in business, he is under obligation to be a consistently inquiring person. Few other disciplines confront a worker with so many unknowns, from his very doorstep to the farthest parts of the earth. Albert Perry Brigham's remark before this Association that a great deal of fragmentary research goes into the preparation of a geography textbook applies to practically every professional endeavor in which a geographer engages.

It seems appropriate at this point to review some of the major phases of geographic research, noting the special character of each in our day.

In the first place, as we all recognize, the number of geographers has been so few and the opportunities so abundant that there is need for the services of everyone of us to find answers to all of the questions which seem worth answering. As William Morris Davis once put it, "We have scarcely begun to describe this earth of ours."

Knowing the life-long devotion of William Morris Davis to the study of landforms and climate, we may be sure that studies of such relatively permanent phenomena would loom large in his thinking were he speaking to you now. The vigorous studies now being pursued in climatology, from localities to the world as a whole, are an index to the need and to the response. There are signs, too, that the study of landforms is undergoing a revival and a reorientation that will lead to a description of landforms as they actually are. Certainly large numbers of geographers could find satisfying research careers in these fields, and nearly all could do some local work along the same line.

There is an obvious urgency in the need for geographic research, for part of what is here today may be gone some years from now. This applies especially to human geography. A first responsibility of every generation of geographers might well be to make and preserve essential records of the geography of their time, to get the concrete data that may soon be beyond reconstruction.

Not only do geographers have a special obligation to study contemporary con-



ditions, and not only do they find that to be an unending job because of ceaseless change, but they also have a large responsibility, one not so commonly accepted, for revising and expanding the knowledge of the geography of the past. Too commonly we have rolled up our record and laid it away to lie untouched. A new day is dawning for the historical geographer, in part because his studies can soon be based on the records prepared by trained geographers of bygone days. That is not only a cause for satisfaction, but it may well give some of us pause, for later generations of historical geographers will subject our own studies to rigorous examination. They will have more time for sifting and weighing evidence than has one who is preoccupied with contemporary geography.

Looked at in historical perspective, the geographer's job as a scholar is vast because of the constant unrolling of new scenes to study and the yearly addition of old ones to keep in mind, to learn more about, to revise. But there is still another view, one of spatial perspective, from which the individual geographer's responsibility looms large and the necessity for research correspondingly great.

Most of us would surely agree that the geographer is peculiarly responsible, or at least has a peculiar opportunity, for study of his home locality and regions. We are burdened by the cost in time and money required to study areas at a distance, we may be blocked by language barriers or the hostility of the inhabitants, and we may not know the special channels of information. In all these ways the geographer at home has an advantage. While I would not for one minute argue that the home geographer has no business to study elsewhere, or, on the other hand, that he has a monopoly of local study, I have long thought that he is the proper person to do most of the work on his home area.

Opportunities are great, too, in the home country as a whole. We are reminded of the statement by the French geographer, Albert Demangeon, that geography has taken on nationality. This aspect of geography has grown in part out of the role of geography in war. And if geography has taken on nationality, it has to a similar degree taken on policy implications. One who is a national is in the best position to grasp these and, indeed, to work toward their development.

Even more important, however, is the facility with which a geographer studies his home country. Expense is generally less, library collections are more accessible before and after field study, and field work and correspondence meet with more ready cooperation from those who are in a position to help. Perhaps the best way to appreciate our limitations when working in a foreign country is to consider the difficulties that a foreigner encounters in our own. We are amused, if not irritated, when a visitor from another land appears to believe that he has delved to the bottom of things in brief visits here. So also must our observations in other countries be shallow and sketchy unless based on long and exhaustive study.

Many geographers have done original work on American geography that has led to publication, and all American geographers have made original observations, vast in total extent, which have not appeared in print. The United States has provided a rich area in which to practice. But to a regrettable, even to a distressing, degree

geographic study of the United States has remained at apprentice levels. The usual studies have been those that could be rounded out in a year or two with a minimum investment of time and money, of observation and reflection. Badly needed to supplement our knowledge of this country are more comprehensive, exhaustive works.

The special opportunity for the geographer in the study of locality, region, and nation is matched by an obligation to avoid a narrow provincialism and nationalism; and to see, however dimly, the whole of which his area of study is but a part. John Wesley, founder of Methodism, could say, "The world is my parish"; and David Fairchild, plant explorer, entitled one of his books, *The World Is My Garden*. Surely geographers have the obligation to recognize that the total area being investigated is the entire earth surface. As it becomes possible for geographers to travel with less expenditure of time to all parts of the world, as geographers multiply in numbers over the earth, and as they accept more wholeheartedly the obligation to make use of productive scholarship in other languages, they will work more effectively toward a comparative regional geography of the world and a rounding out of world patterns of particular geographic features, associations, and spatial relations.

This leads to a more general question which might well call for consideration and reflection: what, in sum, are the end products of geographic scholarship? Daring a provisional answer, I would suggest, to begin with, that we are engaged in preparing a record of the changing life layer of the earth. As time passes, we add to that record, and we not only try to get at the meaning of what we are seeing and recording, but we also have the opportunity, with the passage of time, to correct the record of the past and to revise interpretations of past geography, both in terms of how it came about and of consequences that flow from it. When we think of an end product of geographic study as a record, descriptive and interpretative, of the nature and changes in the face of the whole earth, much of the distinction between historical and contemporary geography disappears, and we concern ourselves with the total geographic record, its extensions and its revisions through time. Not until geographers accept some such conception of their work will they produce many great books of enduring worth.

Perhaps you agree that the geographic record is the principal end product of geographic scholarship to date. Some of you might wish to point out, however, that this record is, in part, made up of generalizations on facts of first or primary order. In neglecting dissimilarities and recognizing likenesses, a regional delimitation, for example, is a form of generalization. The generalizations involved in summarizing and simplifying the geographic record are, however, functions of specific times and places.

But many geographers are tantalized by fragments of a different type of generalization less sharply tied to place and time. What they perceive, and want more of, is something akin to generalizations in physical sciences, the recognition of recurrent phenomena, of recurrent sequences which are not so closely tied to specific places and which are applicable to the earth at different times.

One of the more promising lines of generalization is in the study of the location

of specific phenomena. Surely geographers, of all persons, should be exploring the theory of location of various cultural features. One who moves into this area will find systematic social scientists already working there, and must either retreat or join hands with them in this endeavor.

Another type of generalization that interests some has to do with man-earth relations. Currently some American geographers are shying away from "relations" because, they say, all things are related, and relations are too complex to be treated in a rewarding way. Neither basis is solid ground, in my opinion, for avoiding this kind of study. Whether generalizations dealing with such relations will be so closely tied to time and place as to be unique and, therefore, of limited use outside of their context, or so elementary as to be useless, are questions we are not in a position to answer now.

A third type of generalization deals with sequences. Some have experimented with this in the field of resource depletion and conservation, for example. Such generalizations have value in providing insights and in organizing one's understanding of geographic change, and they have predictive value, although some might say, "Yes, of the obvious." But one could reply, "Perhaps, but not obvious to the persons actually involved in the situations on which the generalizations have been based."

Whether one believes it worthwhile to develop a large body of generalizations which, though derived of necessity from particular time-place situations, are applicable to other places and times, the fact remains that work of that kind is being done. Whether geographers writing at the end of the next fifty years will list sound generalizations of this type as one of the "end products" of geographic scholarship remains shrouded in the mists of the future.

As American geographers get a firmer grasp of the various aspects of geographic scholarship summed up in such end products as the geographical record and geographic generalizations, they may well be aware of the need for a renewed zeal in self-examination, not so much in terms of what ought to be done as in terms of what geographers have done, in terms of the history of geographic thought. Thus I identify a third end product of geographic scholarship, one which some students would consider as including the two already identified.

We need a history of geographic thought that shows the time setting of each major essay in geographic philosophy and methodology. What a man writes from his heart today is not what he would have said twenty years ago or what he would feel compelled to say ten or twenty years hence. We utterly misjudge the view of geography as "human ecology," for example, unless we see it in its nearness to "geographic influence" and "content of area." We fail to understand a critique of regional geography published in 1937 unless we see how far the pendulum had swung toward regional description in the years immediately preceding, for the Second World War has since carried us far toward an appreciation of the topical approach.

I am wondering too if it is not high time that more attention be given to the ideas of our forefathers regarding the problems and findings of substantive research.

Is it not possible that hidden in their writings are germs of thought we need? What questions should be addressed to Matthew Fontaine Maury, to John Wesley Powell, to others on whom our discipline rests? What were they seeking, how did they go about their work, what gaps did they fill for their time, what contributions did they make on which we can build?

We also need a dispassionate study of our forebears as individuals. Indeed, we must have that if we are properly to interpret the remembrances and records of their work. It might be an embarrassing occasion if each member of this group were asked what William Morris Davis stands for in the development of our field, or Rollin D. Salisbury, or Ellen Churchill Semple. Do we know of the long years of service of Ray Hughes Whitbeck, of Almon E. Parkins, and of Richard Elwood Dodge? Has anybody ever called our attention to the felicity of expression of Albert Perry Brigham? Such questions reveal the need for biographical studies of North American geographers.

I dare say that we geographers have never learned to make truly effective use of our great men. We have ignored them perhaps, as we certainly have Matthew Fontaine Maury, Nathaniel Shaler, and John Wesley Powell. If we have not ignored them, we have worshiped them uncritically, or have allowed them to hamper and to bind us. Great men can actually cost more than they are worth if we follow as blind copyists or if we allow the examples they have set to dampen our ardor for further investigation and writing or to make us belittle our own efforts.

Here, then, are identified three of the end products of geographic scholarship: the geographic record, geographic generalizations somewhat divorced from time and place; and, paralleling the preparation of these products, the record of geographic thought, including the history of geographers themselves. The next few years will see notable progress along these three lines, as well as along others of major importance. But if these studies are to be rich and of enduring worth, we must move on from the fragmentary research that so commonly expresses itself orally and passes away with the fading of our memory. North American geographers have the obligation to record a larger part of their observations in more permanent and more widely distributable form. The major challenge for the next twenty-five to fifty years is to reach a higher level of productive scholarship.

The total geographical library resulting from the work of North American geographers is relatively meager. There are many reasons for this, but lack of industry on the part of our geographers is not one of them. On the contrary, if you examine the personal history of any geographer who has been active in the United States over the last twenty or thirty or forty years, you are likely to be impressed with the large number of things he has done. He has initiated many college courses. He has written textbooks. He has spent an enormous amount of time working on college and university problems. He has tackled and successfully elaborated the scope and methodology of his field. He has done, in short, all of these things which added together have given geography a substantial position in the world of learning, all except one thing—the development of a broad and rich professional library, particularly a



library of mature monographs and books that are neither dissertations nor textbooks. Have you ever tried to prepare a reading list of American books for economic geography, or historical geography, or North America? If a non-geographer should ask you for a list of top-notch books in geography, what would you give him? You could scarcely turn over to him a list of textbooks, no matter how satisfied you might be with them; nor would it be suitable to hand such a person books on geographic philosophy and methodology.

One is tempted to pause here to comment on the kinds of books that are needed, but I suppose that an adequate though brief statement would be to say, "all kinds." Books on neglected areas, such as a recent, excellent book on the Philippines. Books in which each of the older members of the Association brings together in one place his various theoretical or philosophical ideas. Books that are largely devoted to the more interpretative aspects of areas and of topical phases of geography. And so on. Fifty years from now the librarian of any large university will not be able truthfully to say, as one did recently, that his library has numerous geographical magazines and many geography texts, but that there is a marked gap where he would expect to find books not specifically designed for classroom use.

Thus far in this paper I have developed two propositions: first, that American geographers now have a reasonably adequate grasp of the breadth and depth of their field as a scholarly discipline, but that they must take care to preserve it against shrinkage, impoverishment, and distortion; and, second, that the next fifty years will see an unprecedented expansion of and revision of the geographic record, substantial expansion of geographic generalizations, and much attention given to the history of geographic thought—all set down to an increasing degree in monographs and books.

### III

How will the need for a greater output of mature, scholarly writing be met? It can hardly come from greater industry or devotion on the part of geographers. When one recalls the zeal and earnestness of W. W. Atwood, R. H. Whitbeck, Isaiah Bowman, A. P. Brigham, and Ellsworth Huntington, to name only a few, one is not unhappy about the industry, the devotion, or the intellectual powers of our leaders during these five decades. What then can be done? This is a question I would lay on your hearts, to ponder and to answer in your own way, just as I hope you will think about each of the other questions I have raised. But here again, I would like to identify some of the elements of what seem to me to be the answer.

In the first place, there are reasons to believe that, thanks in part to the work of the first five decades, geographers in academic posts will now have more time to devote to sustained scholarship: field work, library study, reflection, and writing. It will not be necessary to devote so much time to organizing and presenting new courses, in part because there are more of us and in part because so much of this work has already been done, and the results made available in handbooks, probably the best textbooks produced anywhere in the world. Some of you may have heard

J. Paul Goode say that he had initiated a new course every year or so, and you may also remember the large amount of work evident in the syllabi of his courses. When Professor R. H. Whitbeck was teaching South America in the early twenties, there was not a single textbook on that continent available. The authors of currently used texts on Latin America were still graduate students or were just beginning their postgraduate study.

Closely related to the saving in organizing new courses is that made possible by the reduced need for additional texts. Relatively few geographers now need to devote a large share of their time to that kind of writing, or to channel into texts their creative efforts and their original ideas and findings. Doubtless some of you remember the occasion when one of our number, who has spent much of his professional lifetime preparing textbooks rich in ideas, read a paper before this society and was warmly praised for it. He wryly replied, "All this and more is in my textbook." Not that we want less creative, less original texts, but we do want the products of scholarship so presented that they are not discarded with outdated texts. Moreover, it is good to have a man's creative writing sufficiently isolated so that he himself is known as its source.

There is reason for confidence in increased productivity of geographers because there are increasing numbers in positions which permit and encourage productive scholarship. To see this one has only to recall the large number of geography departments recently established in various parts of Canada and the United States. I am confident, too, that greater opportunity for mature productive scholarship will appear as less energy of the average university professor goes into training of young professional geographers. So long as university departments were few, a large percentage of university men gave so much time to the training of apprentices in our field that they had little time or energy for pursuing their own scholarly interests.

One can hope, too, that the next fifty years will not be so demanding of time of geographers for war efforts and related activities. Many of our older geographers took time out twice for this kind of work; and, however much it added to their own geographical knowledge, it must surely be considered a net drain on geographic productivity. In the late 1930's the number and quality of young geographers coming into the field made it seem that our human resources would at last prove adequate to the task we envisaged. Then came the war, and their efforts were diverted. The post-war period has been less fruitful than some had expected. Perhaps the fruit is taking longer to ripen, though most of us have had ample proof that young men require many months, perhaps even a decade, in which to recover their normal stride following active military service.

But all was not lost in the last war and its aftermath. To an unprecedented degree, young North American geographers studied in other lands. This changed their view of their home land and provided for the first time a large body of geographers who have a sound grounding in field study of foreign areas. The results are beginning to appear in book-length works, as for Japan and southeast Asia.

Doubtless every profession could recruit its numbers with greater care. One

recalls the identification made by a keen French social scientist of the two essentials in the personality of productive scholars: the zeal to solve problems, and the zeal to collect. Such essential qualities should be possessed by a high percentage of the young people entering our field. A successful college president once confided, "In recruiting a faculty you need to bring in only persons of distinct promise, for, sure as fate, half of them will have failed of that promise by the time they reach mature years, and quite possibly through no fault of their own." I have often wondered if Jesus just hit by chance on a similar ratio when He told of the ten virgins, half of whom had no reserves of oil for their lamps, and so could not go into the feast. In the long run, the future of geographic scholarship lies in the hands of the persons most actively recruiting new workers for the field.

All the factors I have mentioned have a bearing on the basic need: greater productivity in geographic scholarship. To these each of you will add still other factors. In addition to these, I, too, would call attention to what I believe to be the major way in which we are now moving toward higher levels of productive scholarship—that is, by a degree of personal concentration that will go far beyond that commonly reached by the older members of this association.

The continuance of the practice of most geographers as generalists is a remarkable case of cultural lag in an age that demands specialism. And now that specialism has been carried so far in many quarters that it is often decried, it may seem strange for one to advocate further movement in that direction. It is possible to go too far, of course, and the time will doubtless come when a president will urge on you a broader approach to your work, but geographers as a group have far to go before they reach diminishing returns from specialization.

It would not be fair to ourselves to pass on without recognizing some of the reasons for tardy specialization. We have had the problem faced by all pioneers, who need to do many things and, therefore, can scarcely become expert at any of them. Many have doubtless followed uncritically the example and pronouncements of men of earlier generations, whose needs were different from ours. Thomas Jefferson was a well-rounded scientist, and something of a geographer; Nathaniel Shaler was a geologist, a geographer, and a man of letters; William Morris Davis, you may remember, recommended both a continent-wide concentration and, at the same time, emphasis on a world-wide topic. It is possible that Davis' advice is suitable for some of us, who haven't moved even that far, but there are others who should drive a salient along one direction into the great unknown. Some men have felt shut off from profitable specialization because of the intellectual fashions of the day. And most of us have had the limitations that a teacher's life imposes. We have faced the difficulty of combining the broad coverage required for teaching with the depth essential to specialization. We have too commonly developed a mental hardpan, resulting from shallow plowing of the same ground over and over for our elementary students.

But these difficulties, while real and large, need not deter us longer. We need a new mind set in teaching, one that recognizes that scholarship is required of the

teacher too. We need a larger measure of cooperation—we need to rely on fellow scholars for the findings in their special fields, as we range ahead along special lines. Our dependence on the work of other scholars increases as we become more specialized in our own area. Fuller use of the results of the labors of others is an essential trait of this era of more intense and sustained concentration into which we are clearly moving.

How should one specialize? The course one takes involves one's bent, preparation, and opportunities. Preparation and opportunity I pass over to give special attention to bent or talent. Each man, declared Ralph Waldo Emerson, has a calling indicated by his talent, and, so Emerson insisted, no other calling but that. A young geographer may well subject himself to some soul-searching to discover his bent, for only in pursuing lines for which he has special aptitudes is he likely to be original or very productive. And here we have reason to rejoice because of the range of geography and of the various kinds of work now called for in this field.

In this big camp of diverse tasks there is room for a wide variety of interests and capacities: for the academic mind, and the practical; for the person who must visualize, and for the person who likes to deal in abstractions; for the historical mind, and the mathematical; for one who must analyze a situation down to its minutest elements and for the person who is gifted at seeing wholes; for the writer adept at description, and for the man who loves exposition but who has not the gift of visualization. There is room here for geographers who delight in taking pictures, and for those who prefer to draw maps; for the worker who is unhappy unless he is outdoors, and his fellow worker who is never so near heaven as when he is buried in a document room; for the person who is satisfied only with the actual concrete details of earth location, and for the one who quickly forgets details, but is constantly searching for generalizations; for the geographer who prefers to study in the home of his boyhood and youth, and the one who is most happy when studying in foreign lands; for the person who is most attracted by unknowns in contemporary geography, and for the student who is happy to reconstruct the past. There is a place, too, for the man who is limited to the use of his native language, and for the scholar who is gifted at serving as an intermediary between those of his own language and those whose thoughts require translation. We have need for the geographer of expansive range and prodigious memory, who writes voluminous definitive works, as well as for the one of limited energy, but critical bent, who is a sharpshooter, looking for gaps and errors in the structure of geographic thought; for the man who is on the lookout for repeating associations and sequences, and for the worker who is most impressed with the unique, the non-repetitive, in his study of geography.

As you think about the men you know with these various talents and interests, you are supporting my next observation: that in reality specialization by North American geographers is already well under way. The early years of the 1950's have seen one after another of our younger geographers declare their special interests, and back their declaration with published work for all to criticize and judge. A few years ago it was hoped that somehow each university would specialize in a



few fields, but that then seemed a forlorn hope. During the past two years a number of the leading university departments have made clear in official statements the fields in which their faculty members are most competent. At the annual meetings of the Association in very recent years small groups have met to consider specialized topics, a sure index to the increase in the number of specializing persons, and one of the rewards of the specialist, who like other folk, does not enjoy always walking alone.

And so we come to a new phase in the life of this Association. Drawing apart, we shall find it all the more important that we come together occasionally. Treading the lonely paths of specialists, we shall welcome even more the opportunity to get together in small groups under the aegis of this Association. Working in areas beyond the range of useful criticism by the generalist, we shall need the caustic comment of men specializing in the same areas. Concentrating on relatively small aspects of a large, overall endeavor, we shall need more and more to join up with others, in order that the pieces may fit together. Distracted from the whole endeavor by the demands of our specialty, we shall need all the more to sit in plenary sessions to listen to men discuss other phases of our work. Moving in the direction of greater specialization, we do so that we may become more mature, productive scholars in a large field of learning. As we move in that direction, we shall find this Association of greater value than ever before, as it fosters and sustains concentration, as it supplies antidotes to the less desirable results of specialization, and as it provides each with the friendly association in face-to-face groups that every human being craves.

#### IV

Some of you have children who will attend the one-hundredth anniversary of the Association of American Geographers. Perhaps they will then look back to this occasion, wondering just how we saw ourselves in 1954, whether we were truly aware of the richness of our heritage and of the opportunities and responsibilities ahead of us. We do not know all that they will read in the one hundred-year record of the Association, but we can be reasonably sure of some things and hopeful of others.

We can be sure that they will see the first fifty years of this organization as a period during which our field of endeavor was blocked out, our place in the sun established.

We hope they will see that, having blocked out our field of endeavor, we had the good sense in the second fifty years not continually to elaborate its outlines and structure, but to accept more fully the obligation to fill in the frame with mature, substantial scholarship, scholarship in every activity, from teaching to business, but especially in productive scholarship leading to substantial professional papers, monographs, and books.

To one who reviews the years since 1904, when this Association first met, the opportunities for a fruitful, adventurous, satisfying life as a geographer in North

America appear never to have been so promising as now. Many limitations to the range and depth of our thinking have been removed, new positions for geographers are opening, and intriguing problems lie at every hand. The way lies open. The first fifty years of this Association have seen the pioneering tasks completed, the land taken up, the clearing done, the seed planted. Our task is to produce more abundant harvests as the years go by.

CIRCULATION AND SETTLEMENT PATTERNS OF THE  
CALUMET REGION OF NORTHWEST INDIANA  
AND NORTHEAST ILLINOIS\*  
(THE FIRST STAGE OF OCCUPANCE—THE  
POTTAWATOMIE AND THE FUR  
TRADER,—1830)

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GENERAL OBJECTIVE

A CARTOGRAPHIC representation and chorographic analysis of the occupance patterns of circulation and settlement as they have changed in time are recognized as essential in understanding how the present-day landscapes have evolved out of the past. Illustrative of this principle is this paper which deals with the aboriginal stage of occupance of the Calumet-South Chicago region and its antecedent bearings on the interpretations of the present-day landscape.

Significant relationships of land and life are considered with reference to four primary geographic functions: geographic position, regional differentiation, inter-regional relationships, and recognizable areal correlations between the human and physical elements of the various environments.

Application of these geographic functions to the study of the Indian-French period reveals that the progression of natural and cultural heritages in the Calumet from one period to the next can be most effectively demonstrated by the technique of using the pattern of circulation as a unifying bond of inter-period as well as inter-regional relationships. Thus, for example, the Indian trail evolves successively into the pioneer's dirt road, then into the improved farm roads, and finally into the present-day paved superhighways with their heavy motor traffic. Further unity of this theme is expressed in the striking similarity of the general arterial Calumet travel patterns, related as they are to the *cul-de-sac* shoreline of Lake Michigan and the three major ancient parallel beach ridges of old Lake Chicago (Figs. 1 and 2).

PROBLEMS AND TECHNIQUE

The task of securing adequate data in quantity and quality for reconstructing an aboriginal landscape poses many problems. Fragmentary records and isolated notes descriptive of the natural and cultural forms of the environment leave much to be desired. A micro-geographic study, such as this, must rely heavily on regional history, characteristically extravagant in historical and biographical details, but exiguous in geographic perspective.

\* A study in historical geography, supported in part by research grants from the Indiana Academy of Science and Michigan Academy of Science, Arts and Letters. Paper read before the Association of American Geographers.

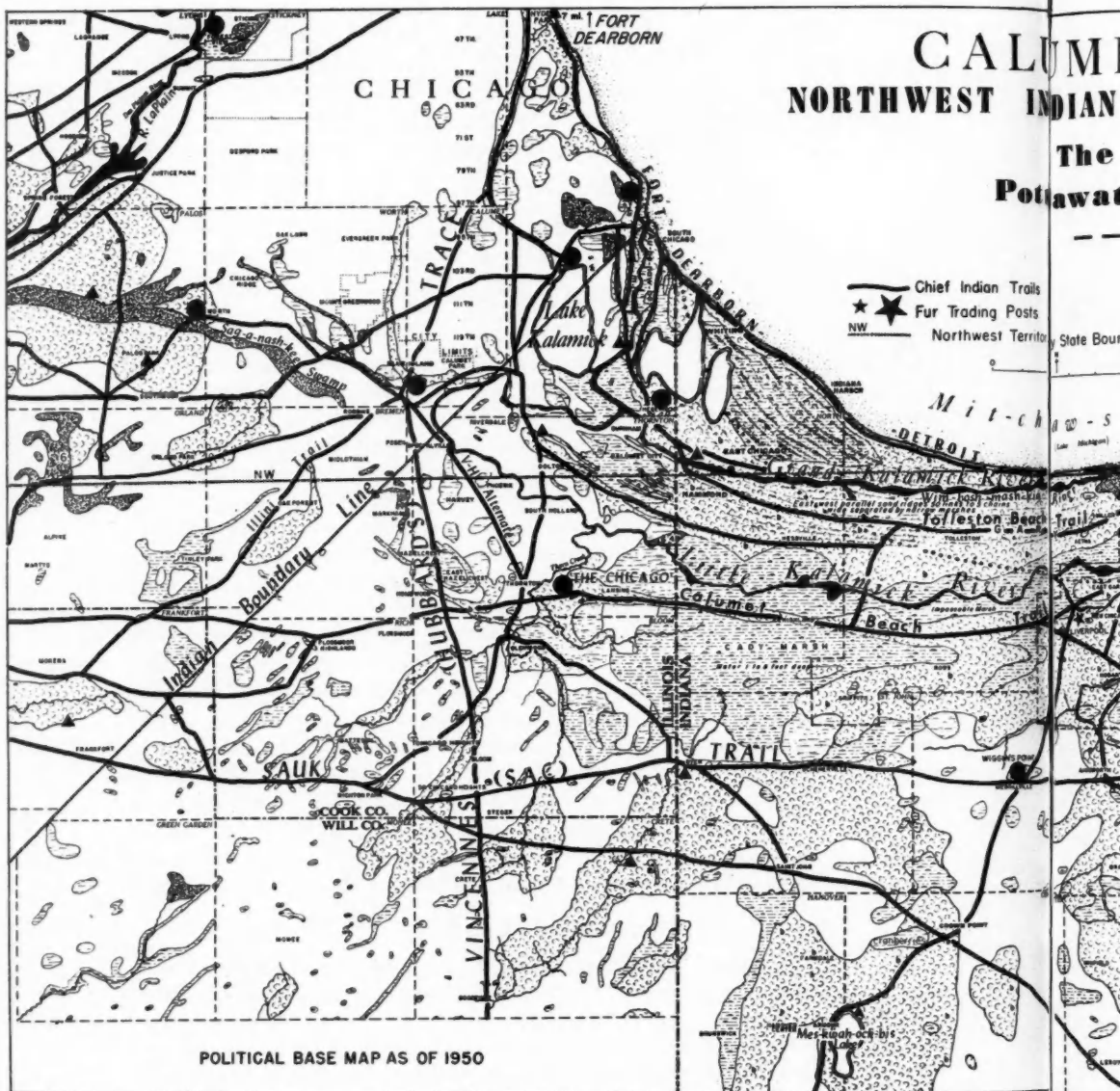


FIG. 1. Pottawatomie occupancy in original and present geographic perspective. Indian trail and village data adapted from Scharf, Knotts, and original federal land survey plats and



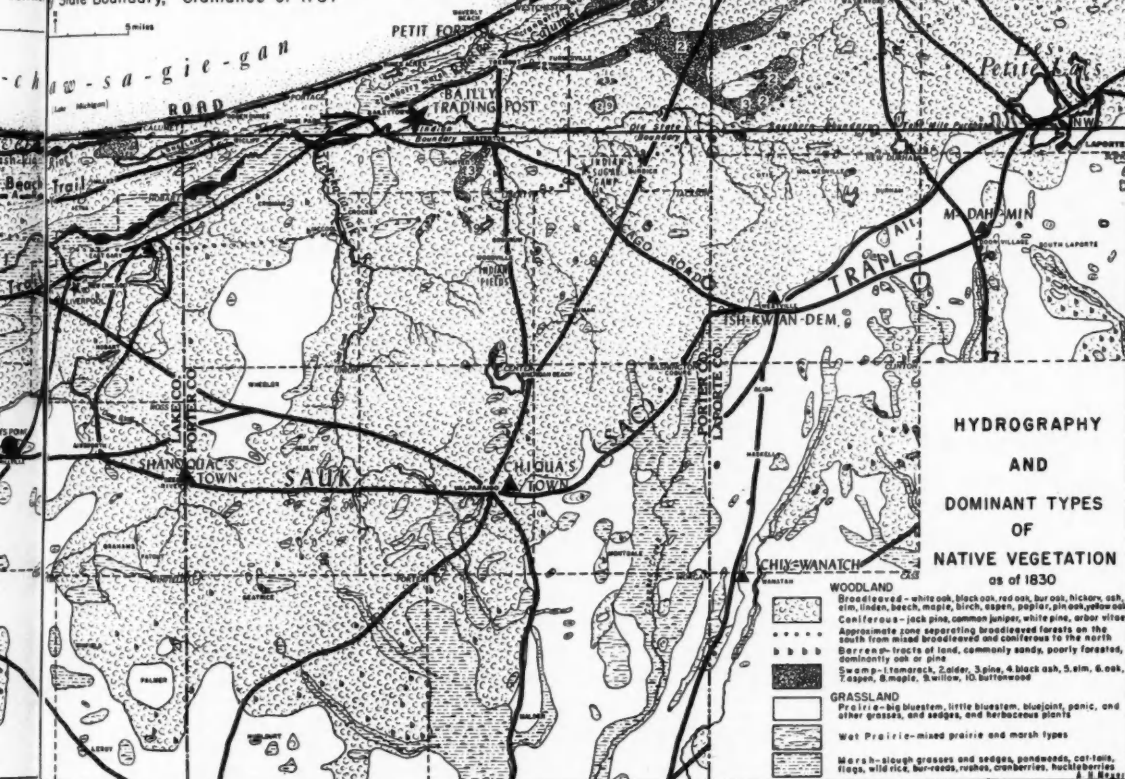
# CALUMET REGION

## INDIANA NORTHEAST ILLINOIS

### The Fundament Potawatomie Occupance

--- 1830

- Trails  
Posts  
Territo
- Chief Indian Villages or Encampments  
▲ Indian Villages or Summer Camps
- State Boundary, Ordinance of 1787



other sources. Fundament features compiled from forty seven plats and accompanying notes of the original Federal land survey, integrated by present-day field observations by the author.

The greatest challenge to the geographer, of course, is to find geographic material which lends itself to cartographic expression. Fortunately, the government deputy surveyors who laid out the range, township, and section lines were under instructions of the United States surveyor general to note and map certain geographic details. Thus notes are supplied on such items as course and width of streams; depth of marshes and swamps; general character of topography, of soil, of timber, and of other vegetation; presence of springs and minerals; evidence of Indian trails, pioneer settlements, and field culture. A check against other sources reveals that the sectional surveys did not consistently record all such phenomena. An Indian trail, for example, often appears merely as a short line crossing a section. Another similar discontinuous line elsewhere may or may not represent part of the same trail. One of the chief problems, then, is to determine the continuity of the aboriginal trails through the forests, over the prairies, and along the streams and marshes.

Areal boundaries on the congressional township plats also do not always clearly differentiate the several areal units such as marshes, prairies, wet prairies, swamps, and timberlands. In fact, it appears that several of these terms, like marsh and swamp, are used indiscriminately.

Thus another problem involves topographic interpretation, areal integration, and regional differentiation of the several landscapes. With the aid of other sources, published and unpublished, and direct present-day field observation, it is possible, nevertheless, to show in map form quite realistically what the fundament or "natural" Calumet originally looked like (Fig. 1).

Another problem arises from the fact that even people who are intimately familiar with the modern Calumet may find difficulty in orienting themselves in this strange looking landscape of over a century ago. Furthermore, regional descriptions of such an area without reference to white man's conventional place names seem equally difficult. Accordingly, modern civil township lines and urban sites are provided on the map to expedite geographic orientation for both writer and reader.

The historical present style of writing is used wherever practicable to further facilitate convenience of expression and vividness of landscape portrayal.

Based on the conviction that place orientation and geographic correlation are primary prerequisites to adequate understanding of natural and cultural landmarks, all basic phenomena referred to in this paper are given cartographic expression, under four categories: Regional Position and Interregional Relations, Landforms, Relief, and The Fundament.

#### IDENTITY AND LOCATIONAL SIGNIFICANCE OF THE REGION

The term "Calumet region" has long been applied to the area about the head of Lake Michigan, but its delimitations have varied chronologically and chorographically. Among the first recognitions of this area as a region is that found recorded on a map by John Mitchell in 1755 as "Quadoche," a name applied by the



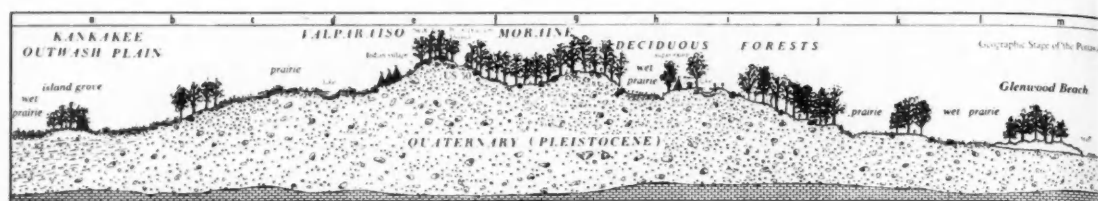


FIG. 3. Generalized silhouette transect of the Pottawatomie physical-cultural landscape

Iroquois to the Huron Indians, a tribe of which—the “Huron Pottawatomie”—is reported to have occupied this region.

The region derives its name from the chief Calumet drainage forms—the Grand Calumet and Little Calumet rivers and Lake Calumet—“Kalamick” being the Indian term used on the fundament map.<sup>1</sup> In reality the Calumet rivers and their tributaries quite well express the “natural” basis of delimitation and unity of the region as here defined. In terms of human occupancy and activities, the area as delimited on the map corresponds approximately to the area in which commuter service to Chicago is common. Thus a very large percentage of the residents in the Calumet region are industrially or commercially employed in the Chicago-East Chicago-Whiting-Gary centers. To outsiders as well as residents of the area the Calumet stands out as a leading industrial region of the United States, and for that matter, of the world.

Probably the most significant fact of location of the Calumet region is its position at the head of Lake Michigan. Extending southward for three hundred thirty-five miles, the lake deflects east-west land traffic through the area about the *cul-de-sac* of the lake. Associated with this position and the shape of the lake are the drainage patterns of streams whose sources and courses adapt them to portage facilities, with one another and with the lake. The crest of the Valparaiso Moraine, which passes a few miles to the north of the city by that name and trends from here in a great arc eastward and westward about the lake, constitutes in reality a continental divide. Streams on the north slope of the moraine are tributary to Lake Michigan, whereas those on the south or west slope are part of the Illinois-Mississippi drainage pattern. The Calumet region thus takes on unusual prominence in the convergence of lake and land traffic on, at, and near the head of the lake through all the historic stages of human occupancy. Thus a writer observes that “From time immemorial this wonderful land at the southern tip of Lake Michigan has been the crossroads of the western continent. Long before the first white man came it was crisscrossed by countless trails of the red man—trails coming up from the south, and the west, and the east, crossed by other trails of the Mascoutins in the

<sup>1</sup> For the meaning and geographic significance of Calumet place names see Alfred H. Meyer, “Toponymy in Sequence Occupancy Geography, Calumet Region, Indiana-Illinois,” *Proceedings of the Indiana Academy of Science*, LIV (1945): 142-159.



from the north (Lake Michigan) to the south (the Kankakee Outwash Plain).

north-west and the lands of the Miamis and the Pottawatomies in the north-east and the Illini in the south-west. These trails met and crossed here as the steam-roads and highroads meet and diverge today."<sup>2</sup>

The map in Figure 1, compiled from data of various sources, shows what the major trail pattern looked like.

A generalized skyline silhouette (Fig. 3) serves to illustrate diagrammatically the general vertical and horizontal space relationships of the east-west circulatory pattern to the physical landscape features, areally represented in relief model photo (Fig. 4).

#### GENERAL NATURE OF INDIAN TRAILS AND THEIR INFLUENCE ON WHITE MAN'S OCCUPANCE

The relevance of a study of Indian trails in relation to white man's subsequent occupance of a region is well brought out in the following statement by Teeter. "No people can inhabit a territory for countless years and pass on without leaving some influence to be felt there for generations to come. And so perhaps nothing that the Indian left plays so important a part in our life today as the trail. The Indian in following the natural pursuits of life had to go from place to place. In doing so he sought the shortest possible route, with due consideration for his own safety and natural barriers. Where the underbrush was scantest, around the hills and lakes he threaded his way. What proved to be the line of least resistance for one Indian was taken up by others and often in part by the larger wild animals. The Indian not only walked and rode over these paths but he often hitched his pony, by means of a strap over the shoulders and back and poles at his sides, to a basket in which he transported either passengers or baggage. These baskets helped materially in beating the paths, so by the time the first white men appeared here these paths were well defined trails and were taken up by the explorers, hunters, traders, missionaries, soldiers and settlers.

"Naturally even before the coming of the white man some of these paths served only a very local purpose, while others linked themselves into a greater system.

<sup>2</sup> John O. Bowers, A. C. Taylor, Sam B. Woods (Editorial committee) *History of Lake County* (quoting Armanis F. Knotts), Publication of the Lake County Historical Association. Calumet Press, Gary X: 1929. p. 100.



Two trails traversed the entire breadth of the continent. The Indians referred to them as the great eastern or western trails depending upon their local view point. Seldom if ever did an Indian cover the entire length of either of these trails, but often one would cover a thousand miles in one trip. Parts of these trails have woven themselves into our history and our lives, as for example the 'Cumberland Trail,' the 'Santa Fe Trail,' the 'Oregon Trail,' and the 'Sauk (Sac) Trail,' . . . [center of Fig. 1].

"Trails were not always strictly followed. Weather conditions, floods of rivers and streams, and especially wet times, the crossing of marshes often occasioned detours."<sup>3</sup>

RELATION OF THE CALUMET TO OTHER REGIONS OF THE UNITED STATES AS  
INDICATED BY CONTINENTAL TRAIL ROUTES

Arterial routes of travel represent one of the best geographic criteria for observing the relation of one region to another. This is of particular significance during this period in understanding how the region was explored and possessed; how its furs were exploited and marketed; how the federal government extended its claims to Indian lands from adjacent Indiana regions to the Calumet and defended it; and how and from what regions white settlers came in to buy the government lands ceded by Indian treaties.

*Interregional Significance of the Lake Shore Trail*

The Calumet came to be known as the "Great Short Cut" from the lands of the Chippewas and the Iroquois, from the Sacs and Miamis and Pottowatomies, to the prairies of the Illini and the Sioux."<sup>4</sup>

One of the most significant routes of travel through the Calumet was the trail mapped out by nature itself—the shore line beach of Lake Michigan, simply called the Lake Shore Trail (Fig. 1). It naturally forms the easiest and shortest route around the lake. The very occupants of the Calumet, the Pottawatomie, came into the region by this route (Fig. 5). Originally inhabiting the northeast shore of Lake Michigan, the tribe crossed the Straits of Mackinac and settled for a time in the Green Bay area of Wisconsin. From here they subsequently migrated southward on the Lake Shore Trail into the Calumet region.

The Lake Shore Trail from Green Bay to Fort Dearborn (Chicago) is known as the Green Bay Trail; its extension southeastward through the Calumet region to Michigan City on the lake and then to Detroit was called the Fort Dearborn-Detroit Road (Fig. 1). Over it filed the Indian, the French explorer, and the French, English, and American troops. On its course near the mouth of Rivière des Bois or Fort Creek (Dune Creek of modern Waverly Beach) stood Petit Fort

<sup>3</sup> Emma Leah Teeter: *Indians and Indian Trails*, LaPorte, Indiana, no date. (Unpublished typewritten ms. in LaPorte City Library, 5-7.)

<sup>4</sup> R. D. Hammons, *Original Government Surveys of Gary*. (A typewritten letter in Gary City Library, May 31, 1934: 29.)

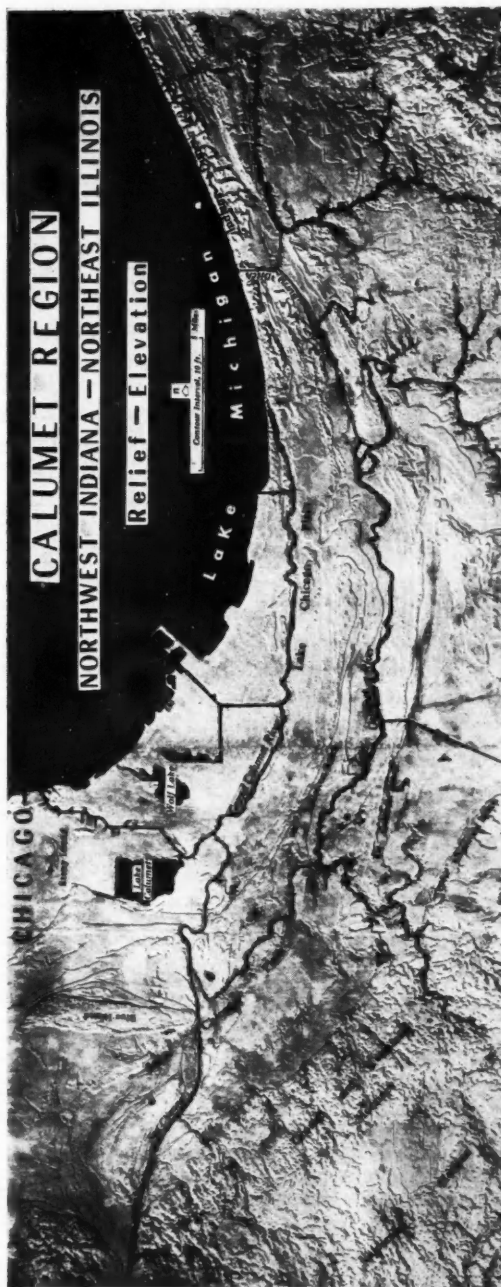


FIG. 4. A major portion of the Calumet in contour, after model constructed by the Department of Geography and Geology, Valparaiso University.

reportedly erected by the French in the early 1750's and the only local site identified with military activity between the British and the Americans of the Revolutionary War.<sup>5</sup>

The natural advantages of territorial exploration and aboriginal travel along this route is quite obvious. It always provided definite geographic orientation. The sand, always well drained, when compacted formed an excellent dry, level, and smooth pavement. The route avoided obstructions by trees, fallen timber, and high prairie grass.

The beach trail skirted the extensive marshes and swamps which make most of the Lake Chicago Plain impassable the greater part of the year. The only interrupting water courses to land travel along this route through the Calumet were the dual western and eastern mouths of the Grand Calumet River and the mouth of Trail Creek; the latter two were often fordable by sand bars.

The military significance of this trail is also noteworthy. The encroachment of white man on Indian lands in the Northwest Territory caused resentment on the part of the redskin here as elsewhere. It became necessary for the government to establish military outposts in the frontier country. Incidentally they also served as trading posts between the whites and the Indian. And so forts and trading posts, like those at Detroit, Chicago (Fort Dearborn), and Rock Island, formed significant termini of travel routes trending east-west through the Calumet, just as Mackinac, Fort Dearborn, and Vincennes were termini of north-south traffic through the west end of the Calumet region (Fig. 5).

The building of Fort Dearborn was ordered by President Jefferson in 1803. This was carried out by two detachments of troops dispatched by Secretary of War Dearborn from Detroit—one by the Lake Huron-Lake Michigan route, the other overland. The land party proceeded from Detroit to LaPorte County by the famous Sauk Trail, then up Trail Creek Trail to Michigan City, whence it completed the journey to Fort Dearborn by the Lake Shore Trail. "This was the first body of American soldiers to cross the Lake and Calumet region of Indiana and in constructing Fort Dearborn, little did they dream they were laying out the foundation of one of the mightiest cities of all times. But four cabins of traders were in existence in Chicago when the soldiers arrived."<sup>6,7</sup>

#### *Interregional Significance of the Sauk Trail*

The second major line of communication is the Sauk (Sac) Trail, the longest and most important interregional trail passing through the Calumet.<sup>8</sup> It represents

<sup>5</sup> *The Calumet Record*, Historical Edition, XIX, No. 50 (1916); no author nor pages given.

<sup>6</sup> T. N. Cannon, H. H. Loring, C. J. Robb, *History of the Lake and Calumet Region of Indiana*, Historians' Association, Indianapolis, Indiana: 1927. p. 46.

<sup>7</sup> Fort Dearborn was destroyed by the Pottawatomies and Winnebagos in 1812, and reconstructed by the War Department in 1816.

<sup>8</sup> A notable local Indian authority of the Chicago area designates this also as a mound builders trail. See Albert F. Scharf map on "Indian Trails and Villages of Chicago, and of Cook, DuPage, and Will Counties, Ills. (1840)," (1900-1901). In the library of the Chicago Historical Society.

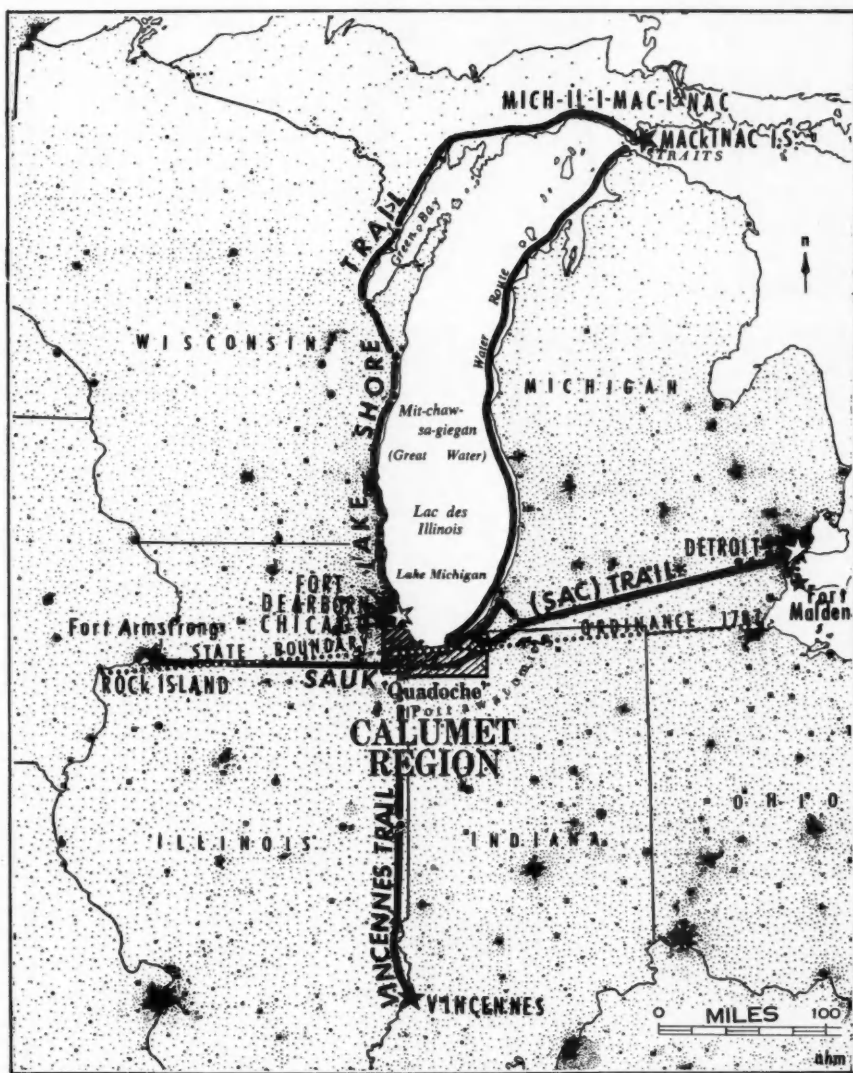


FIG. 5. Regional geographic relations of the Pottawatomie with the "outside world." Base map, by the U. S. Bureau of Census, shows population pattern of the area as of 1950.

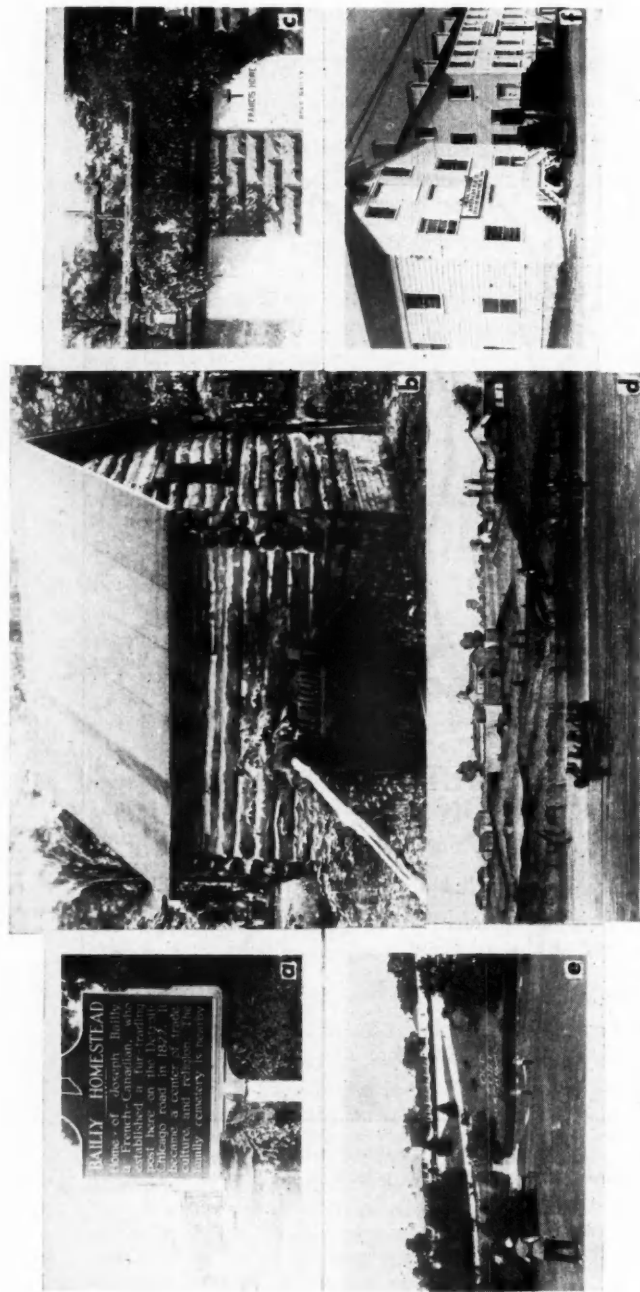


Fig. 6—Geographic landmarks of the Pottawatomie Indian-French Fur-trader occupation of the Calumet Region.

- a. One of the relict travel routes of Indian-Pioneer days converted into modern Highway US 12, at the intersection with another road to the right which leads to the historic Bailly homestead. (Photo by the author.)
- b. The oldest of the four partially reconstructed relict buildings of the original half score structures of the Bailly trading-mission post, whose location is shown in Fig. 1. The now private posted property—not open to the public—represents the oldest settlement of northwest Indiana. (Photo by Saidla Studio.)
- c. The Bailly cemetery, north of the homestead, on a sandy knoll on US 12, where, according to the inscriptions on the markers, rest "Honore Gratiem Joseph Bailly de Messein" and some members of his family. Wall is of modern construction. (Photo by the author.)
- d. What Chicago (Fort Dearborn), a neighboring Calumet fur-trading post, looked like at the time Bailly founded his own trading post. (Sketch in Schoolcraft's "Indian Tribes.")
- e. Old Fort Mackinac on "Michilimackinac" Island, where Bailly marketed his furs. The statue is that of Jacques Marquette, whose explorations and missionary journeys were among the first to bring into geographic focus the extra-regional relations of the head of Lake Michigan area to Mackinac Island. (Photo by the author.)
- f. Mackinac buildings of the American Fur Company which was founded by John Jacob Astor in New York in 1808. The trading post was established in the same year as the one by Bailly (1822), he being one of the agents of the fur company. (Photo by the author.)



the transcontinental trail of northern United States and, in the Calumet region, as the maps reveal, coincides roughly with the modern routes of Indiana 2 and Lincoln Highway, US 30. Since the understanding of the course of present-day highways, then, depends in part upon a knowledge of the pre-existing aboriginal trails, it is further revealing to note the geographic connections and historic circumstances associated with the founding and naming of this route.

"During the Revolutionary War and the War of 1812, the Sauk and Fox Indians were the allies of the English. The English Government, for their services, gave them an annuity in goods to be delivered to them at Malden, Canada, across and a little down the river from Detroit [Fig. 5]. Later the United States Government, in exchange for land, promised to pay the Sauks six-hundred dollars and the Fox four-hundred a year, to be paid in goods in Detroit. The Sauks and Fox originally lived in Wisconsin along the Fox River. By a treaty, they agreed to surrender their territory in Wisconsin and move to Rock Island, Illinois. From there they went each year, men, women, children, ponies and dogs, to Detroit and Malden to receive the annuities, and from this annual pilgrimage the trail came to be known as the Sauk (Sac) Trail."<sup>9</sup>

This was the route Black Hawk often traveled in going from his home on the Mississippi to Detroit.<sup>10</sup> Over this trail also marched the Sacs and Foxes from their Rock Island home eastward to help the Five Nations, their allies, in their conflict with the British.

Actually, the Sauk Trail extended as far eastward as New England, and westward to Omaha where it divided into two branches, forming the southwest Santa Fe Trail, and the northwest Oregon Trail.

Knotts, a local authority on pioneer history, points out that "the old Sauk Trail was not only used by explorers, traders, trappers, and soldiers, but later by the early settlers who came along the trail and settled upon it or followed out some other trail to some favorite spot for their new home." He asserts that "No other Indian trail through LaPorte County was so definite and used to the same extent, as the Sauk Trail."<sup>11</sup>

And Scharf, the leading Indian trail authority on the Chicago-Calumet region, noted that "With the coming of white man the Sac Trail became first a bridle path, then a public highway, stage and mail route" along which the main streets of many towns were subsequently laid out.<sup>12</sup>

Even those who are today familiar with the traffic flow of speeding cars and trucks on dual lane Lincoln Highway will agree with Ball that "To see in one continuous line, living and moving westward now, the Indians that during their occu-

<sup>9</sup> Teeter, *op. cit.*, p. 7.

<sup>10</sup> Otho Winger, *The Potawatomi Indians*. Elgin, Illinois: 1939. p. 57.

<sup>11</sup> A. F. Knotts, *Indian Trails, Mounds and Village Sites of LaPorte County, Indiana*. (Typewritten ms.), 1932. p. 3.

<sup>12</sup> Albert F. Scharf, *Indian Trails and Villages in Lake County, Illinois*. (Unpublished ms.), p. 123.

pany had passed along it, and then, after them, the white covered wagons with ox teams and horse teams that from 1836 till even now (1900) have passed along that roadway, would be a sight, a procession, worth going many miles to see."<sup>13</sup>

It is to be expected that a trail of such prominence should have many other leading and tributary trails directing their traffic to and from this chief line of Calumet interregional circulation. These tributary connections, as placed on our map, are considered in a subsequent section.

#### *Interregional Significance of the Vincennes (Hubbard's) Trace*

The third most important route of interregional communication crosses the Calumet from south to north about six to eight miles west of the Indiana-Illinois state line. Originating at Vincennes, it came to be known as the Vincennes Trace, and, since its destination was Chicago, it was locally referred to in the Calumet region as the Old Chicago Road. Because it followed the early chief Indian trail in the area, it was also known as the Pottawatomie Trail. Whereas Gurdon E. Hubbard, a famous fur trader of the American Fur Company, came to the Chicago region over this route in 1818, it also was referred to by some as Hubbard's Trace.

It should be pointed out that these latter terms at times cause confusion for the reason that the name "Chicago Road" in the literature on the area is also applied to the early pioneer road connecting Detroit with Chicago via lake shore or near lake shore routes to Chicago (see trail in Jackson Township, Fig. 1). Similarly "Pottawatomie Trail" has been applied loosely to a number of trails on the Indiana side as well as the Illinois side of the Calumet region. And as for Hubbard's Trace, this term at times is used synonymously with Vincennes Trace and at other times is seemingly restricted to a shortened alternate branch of this route directly from Thornton to Chicago. This shortened route in turn has also been referred to variously as the Holland Road and Chicago City Road.

These examples of early road toponymy indicate that already for this early date one senses the difficulty of identifying thoroughfares which branch, join, or cross one another, and which have developed a veritable maze of traffic lanes often difficult to distinguish even with the aid of modern road maps.

As in the case of the Lake Shore Trail, the significance of the Vincennes Trail arises mostly from the strategic military defense and pioneer settlement qualities of the points which the trail connected. Vincennes was founded as a French military post in 1731, and here, four years later, was established the first permanent settlement in Indiana. After the fall of Quebec, an English garrison occupied the fort. During the Revolutionary War, General George Rogers Clark took possession of it, and in 1800 it became the capital of Indiana Territory.

The geographic importance of Fort Dearborn has already been pointed out in connection with the Lake Shore Trail.

Barce observes "The reasons for the existence of this great [Vincennes] trail

<sup>13</sup> T. H. Ball, *Northwestern Indiana from 1800 to 1900*. Chicago: 1900. p. 77.

are at once apparent. The Pottawatomie control . . . extended from Lake Michigan to the north bank on the Wabash. . . . Now this great trail, running the whole length of the territory . . . served to unite all the Indian villages . . . and connected the different bands of this tribe with the trading post under the guns of Fort Dearborn at the north, and the ancient post of Quiatenon, the French traders of the Wabash, and the post at Vincennes on the south. . . .

"Along this trail passed the Pottawatomie of the Wabash villages who took part in the terrible massacre of the garrison at Fort Dearborn on August 15, 1812. . . ." <sup>14</sup> Winger notes that "Over this trail the Pottawatomie and Winnebago warriors went south to confer with Tecumseh and to take an important part in the Battle of Tippecanoe. Along this route, from Danville to Chicago, Gurdon Hubbard later established trading posts so that the Vincennes trail became known as Hubbard's Trace. It became a great pioneer road for emigrants to the west. Thousands of moving vans and caravans went to their homes in the northwest by this route from the Ohio River. It was one of the first routes to be improved by the State of Illinois. In its early pioneer days this route was dangerous to travel. Here and there in this great prairie were low hills or groves which afforded good places for camping. But some of these pleasant looking places became the rendezvous for robbers who went forth to rob and kill the travelers. From this trace other trails led to hunting grounds and to places where banditti had their centers." <sup>15</sup>

#### THE CALUMET REGIONAL TRAIL PATTERN

With the maps on regional position, landform, relief, and vegetation serving as environmental background, we shall now analyze the more significant trail routes as related to these factors as well as to indicate their relationships to the Indian villages and their contemporary white settlements.\*

The original surveyors were under government instructions to record trails. Such information was considered of value for several reasons. It has long been recognized that Indians, living as they did like the animals in the closest adjustment to their environment, sought out the line of least resistance to movement. The first white traders, travelers, and settlers would logically take advantage of Indian-made thoroughfares. As indicated above, these highway "naturals" actually were selected in part as routes of the modern highways. It was recognized also that mapped trails would serve as guides to men who desired to buy land without seeing it. And the government itself was interested in trails for military purposes.

Important as was such information, the surveyors of the Calumet region unfortunately did not take this part of their assignment too seriously. If we had to de-

<sup>14</sup> Elmore Barce and Robert A. Swan, *History of Benton County, Indiana*. The Benton Review Shop, Fowler, Indiana: 1930. p. 59ff.

<sup>15</sup> Winger, *op. cit.*, p. 60.

\* To reduce the paper to publishable limits, 22 pages of descriptive and interpretative material of the ms. had to be deleted, thus increasing reliance on the maps for topographic portrayal and interpretation of the aboriginal landscape.

pend solely upon the surveyors' plats and notes for trail information, it would, with few exceptions, be next to impossible to draw continuous trail routes from one trail junction or terminus to the next. The Sauk Trail is practically the only primary exception. Fortunately, several early enthusiastic and enterprising pioneers, contemporary or near contemporary of the Indians, interested in discovering and recording facts of local county geography and history, supply considerable, if not all, of such data as are needed to fill in and tie together the widely separated section-line trail markings of the early survey. Even with such aids, some trail sections cannot be mapped with absolute certainty, and some evidence is forever lost.

*Primary Trails and Their Relationships to Regional Differences in Position, Terrain, Vegetation, and Settlement*

The cartographic data on the three regional maps (Figs. 1, 2, 4) may well be correlated and integrated by a somewhat detailed description of the landscape along selected routes of travel. Such may be regarded as "trail transects," revealing how the topographic forms are related to each other, and especially how the several routes of travel are related to regional differences in geographic position, terrain, vegetation, and settlement forms. It is often stated in local literature that Indians follow the "most direct" route, or the "line of least resistance." To what extent are these statements actually true? And to what extent were the incoming white settlers guided by these environmental or aboriginal influences in building their own road? Where there was a choice between a path through the forest or over the prairie, which one was generally selected? Did the different kinds of timber and marsh terrain and vegetation affect the travel situation? Description of several representative routes of primary circulation should aid us in answering such questions. We may think of them as geographic transects.

*Sauk (Sac) Trail Transect*

The most significant route of Indian travel across the region seems to have been the Sauk or Sac Trail. It was the principal east-west Indian route across the United States. As indicated above, along it Sauks from Rock Island, Illinois (Fig. 5), travelled annually to Detroit to get their \$600 annuity in goods given to them by the United States Government for land concessions. Previously the Sauks had made an annual pilgrimage to Detroit and Malden for gifts from the English. Until the construction of the dual lane for the new Lincoln Highway (US 30), the Sauk route constituted the chief traffic-way across the Calumet region. Its vestigial elements have been inherited in part by the new Lincoln Highway, the old Lincoln Highway (now US 330), and Indiana 2 (Fig. 2). On the surveyor's plats, sections of this general course were marked "Rapids of Illinois River to LaPorte," and "Rock Island to Detroit."

The Sauk Trail enters the Calumet region on the western boundary of Frankfort Township, where, in the middle of the township, it crosses the old Indian Boundary Line, significant in the history of the Illinois and Michigan Canal project. From here its route is eastward through Rich and Bloom townships, following in a general

way the higher terrain of the Valparaiso Moraine across the Illinois-Indiana state line to Dyer. At the east end of Section 32 of Bloom Township, it crosses the old state road from Vincennes to Chicago.

Throughout this course the country is a dry rolling prairie, which facilitated travel. Marshes, swamps, ponds, and "wet prairies" which, as can be seen on the fundament map, are so common in the Calumet of this period are here restricted on the moraine to the low swales and stream edges. The survey plats show them to be extremely varied in size, shape, and frequency. Poorly drained depressions in this section number as many as three or four per square mile, as in Rich Township, where they are by far most numerous. But the trail finds no difficulty in detouring about them since the wet spots are relatively small and circular or elliptical in shape.

The only other physical obstacles in this course are Thorn Creek with some lowland on each side, a tributary to Thorn Creek farther east, and an unnamed stream just east of the state line. None of these, nor a strip of timber on each side of Thorn Creek, presents a serious obstacle, however, for the creek is near its headwaters and is less than 25 links wide.

From Dyer through Schererville to the east end of St. John Township, the Indian took advantage of the high and dry sandy ridge—the Glenwood Beach—deposited by the old glacial Lake Chicago against the Valparaiso Moraine at about 55 feet above the present level of Lake Michigan (Fig. 4). Unlike the adjacent moraine on the south, the sand ridge has no undrained depressions on it. And unlike the low lying wet prairie and impassable marshes on the north, it is elevated 20 to 30 feet and is thus negotiable even in the wettest season. A light growth of timber, commonly referred to as "oak barrens," seldom impedes travel.

Entering Ross Township, the trail leaves the beach ridge, which here trends northeastward, and again enters upon the moraine. After a few miles through oak forest, it extends over a dry prairie eastward to Merrillville. This village site, next to a small grove of timber, is one of the most important Indian settlements on the Sauk Trail. As a pioneer settlement it came to be known as Wiggin's Point and also later as McGwinn's Village. "It contained a large plat of smooth and well worn ground for dancing. . . . A few rods distant was the village burial ground, the best known Indian cemetery in Lake County. . . . The site of the village and cemetery seemed well chosen, being at the juncture of the woodlands and the prairies."<sup>16</sup>

But its most noteworthy geographic feature was its focal traffic position. Sixteen trails are said to have converged on this point.<sup>17</sup>

The main intersecting trail, as shown on the fundament map, is that originating at Kankakee, Illinois, which enters the Calumet area at Cedar Lake, and, after crossing Merrillville, heads northeast to Liverpool near the junction of Deep River with the Little Calumet, where there apparently was a fur-trading post.

<sup>16</sup> William Frederick Howat (and seven co-authors), *Standard History of Lake County, Indiana, and the Calumet Region*. Chicago: 1915. p. 19.

<sup>17</sup> Winger, *op. cit.*, p. 58.



Continuing eastward over the dry prairie for two miles the Sauk Trail again enters a forest, dominantly of yellow and white oak, through which it extends for three miles to the Indian village of Shanoquac's Town, site of modern Deep River on the river by that name. Near it was a huge mound, shaped like a flat iron, at the apex of which was an enormous well twenty-five feet in diameter, probably used for some sort of water cure.

For the next seven miles the trail extends eastward over "swell and swale" surface, through a rather heavy growth of white oak, red oak, yellow oak, and bur oak. Then it encounters the wet prairie and stream of Chiquew Creek (Salt Creek) just before entering the modern site of Valparaiso.

At Valparaiso was another significant trail junction. Several trails from the Kankakee region projected northward. One followed essentially Indiana 2 into Valparaiso and then the approximate modern Indiana 49 to Chesterton. Thence it continued northward to Tremont, where it joined the famous Calumet Beach Trail. Another line of traffic branched off northeastward, headed for Abercronk on Lake Michigan at the mouth of Trail Creek, site of modern Michigan City.

An Indian village is also reported in the neighborhood of Valparaiso. "The first white settlers in this region (Center Township) found, on the west side of the southeast quarter of Sec. 19, Range 5, a little north of the LaPorte road, a small Indian village of perhaps a dozen lodges, which was called Chiqua's Town, from an Indian who had been the chief of a remnant of the Pottawatomes."<sup>18</sup>

No evidence for the existence of this village is indicated in the original survey records, but a "field" is noted on the edge of the timber on the southern boundary of Section 19 of Center Township. However, this field, like six others noted in the prairie area to the east and south, may represent white man's culture, since several bear Caucasian names.

From Chiqua's village the trail heads northeasterly to the Indian village of Ish-kwan-dem (Westville) and M-dah-min (Door Village). Between Chiqua's village and Westville the trail is deflected sharply northeastward onto the dry Washington Township prairie to avoid the marshes of the headwaters of Crooked Creek which is here from one to two miles in width and covered with water up to several feet in depth.

After crossing the smaller arm of the Crooked Creek marsh the trail skirts the longer marsh by striking through a rather heavily timbered tract until it reaches Westville. There it leaves the oak timber tract at about the center of New Durham Township and crosses the level and dry LaPorte prairie to M-dah-min.

Both the Indian villages of Ish-kwan-dem and M-dah-min are located on open prairie next to forest (Fig. 1). The former is said literally to mean "the door;" at the latter place is "Door Village," and the French equivalent "LaPorte." The prairie in this area as well as the city of LaPorte only a few miles distant to the northeast have been so named.

<sup>18</sup> J. Gilbert McAllister, "The Archeology of Porter County," *Indiana History Bulletin*, X (Oct. 1932): 14.

As Knotts points out, "This [Ish-kwan-dem] was a favorite location, being on the boundary of the prairie and at the entrance of the woods or forest. Hence the door, going into or coming out of . . . and from this place, the word LaPorte (the door) was more than likely derived."<sup>19</sup>

Solon Robinson reports that "Adjoining the Door Prairie on the north is a very large body of Sugar tree timber. The Indians have many excellent Sugar Camps there. They are well furnished with large copper and brass kettles, which at the end of the season they bury until wanted again."<sup>20</sup>

From Door Village the trail leaves LaPorte Prairie of Scipio Township, enters the oak barrens and lake district of Center Township to the north (site of modern LaPorte), and then heads northeastward for Detroit via Grand Travers, Jonesville, and Ypsilanti.

Journeys from Detroit and other points in Michigan westward to Chicago might proceed to the mouth of the St. Joseph River on Lake Michigan, then take the Lake Shore Trail direct to Chicago. The natural advantages of territorial exploration and aboriginal travel along this route are quite obvious. It always provided definite geographic orientation. The sand, when compacted, formed an excellent dry, level, and smooth pavement. It avoided obstructions of trees or fallen timber and high prairie grass.

The Lake Shore Trail skirted the extensive marshes and swamps which make most of the Lake Chicago Plain impassable the greater part of the year. The only interrupting water courses to land travel were the Me-eh-way-se-be-weh River (Trail Creek), the Riviere des Bois (at Waverly), and the two mouths of the Grand Kalamick River. There were certain seasonal handicaps, however. In stormy weather the roily surf of the lake would prevent the use of the more compacted sand on the shore. In winter when blizzards blew from the west or north over the lake, there was no such protection as was afforded by forests.

Then, as now, several other alternate routes were available, via the Sauk route previously described. Either the traveller could follow this route all the way westward to the Vincennes Trace and then north along this trail to Chicago, or he could take any one of the several branch trails leading off from the Sauk to points on the old or modern beach trails, as indicated on the fundament map.

The transect study is limited here to what appears to have been one of the chief routes of traffic in both the Indian and early pioneer period.

In the vicinity of LaPorte four branch trails tributary to the Trail Creek Trail may be used to reach Lake Michigan. All of them follow essentially the same type of terrain, successively traversing several miles of rolling moraine, a mile of lake plain with ancient beach-dune topography, a mile of ground moraine, and about three more miles of lake plain and associated beach-dune deposits.

<sup>19</sup> Knotts, *op. cit.*, p. 8.

<sup>20</sup> H. A. Kellar (Editor, Selected Writings), "Solon Robinson, Pioneer and Agriculturist," *Indiana Historical Bureau*, I (1936): 63.

The cover for the first half of the way is mostly yellow oak, white oak, and red oak barrens. Over the latter half the timber is of the mixed broadleaved and conifer type. The former is essentially the same stocking as previously mentioned; the latter consists chiefly of pine which occurs on both the sandy beach deposits as well as in the swamps near by.

The terminus of the trail, after which the creek itself was named, became the site of Michigan City whose position in relation to Trail Creek and the lake in the early days had about the same strategic significance as that of Chicago to the Chicago River. The site is rich in historic traditions, the kind that well serves local centennial publicity. "The mouth of Trail Creek was visited by Joliet, Marquette, and LaSalle between 1673 and 1679. . . . During the splitting up of the Northwest Territory in the early eighteen hundreds the site of Michigan City was juggled around from Indiana territory to Wayne County, then to Michigan territory."<sup>21</sup>

#### Calumet Beach-Tolleston Beach Trail Transect

The "inland" route from Michigan City to Chicago follows essentially the Calumet Beach to Baileytown. It continues along the Tolleston Beach westward, crossing the Indiana-Illinois state line in the Hammond-Calumet City vicinity, and thence northward to Chicago. We have named it after the prominent beach ridges with which it is identified. The major part of its course became the first stage coach thoroughfare in the region and later the arterial highways US 12 and US 20 (Fig. 6a).

The sandy beach ridge to Baileytown rises above the marshes and swamps on either side sufficiently to produce a naturally well drained roadbed. The terrain and cover are characterized by the early government surveyor as "sandy barrens" (oak and pine); the adjacent marshes are heavily stocked with cranberry; and the timber in the neighboring swamps consists dominantly of tamarack, aspen, maple, and pine.

The trail route from Baileytown through the Gary region to Hammond, where there also was an Indian village, is ill defined, since the topography here consists of a broad belt of supernumerary sand ridges and miniature marshes. Any one of the ridges might well have served as a pathway. Moreover, evidence of any trail, however well travelled, is not readily preserved on such type of terrain.

The surveyor characterizes the terrain well when he writes that the "Land is flung up into ridges of from 50 links to 5 chains wide, and rows of wet prairie running together with the ridges for miles perfectly straight." The Indian had his choice of trail routes according to the dictates of the weather and his own whims, and so, even the several branches of the trail on the west end must be considered as part of a generalized pattern rather than as definitely definable local pathways.

Throughout most of this sandy tract the land is characterized as "poor sand hills" with a "scrubby growth" of timber. Yellow oak, white oak, and pine are most frequently mentioned in the surveyor's field notes.

<sup>21</sup> Phil. T. Sprague, "Centennial Celebration, Michigan City, Indiana," *Chamber of Commerce*, (1931): 1.

On either side of this land route the Pottawatomie also had, of course, the choice of varying his journey by using the Little Kalamick or Grand Calamick rivers. Thus Swartz points out that "The Calumet river was especially attractive . . . , since it furnished so many muskrats and mink for fur, and so many fish and water fowl for food."<sup>22</sup>

Leaving the Indian village at Hammond the trail abandons the Tolleston Beach and turns sharply northward along Howard Avenue to an Indian village at Hege-wisch. From this place, the trail offers an interesting study in minute local adaptations to a maze of land, water, and vegetation forms much more readily understood from the fundament map than from a description. It is interesting to see how the several branches of the trail follow the oak ridges and avoid the marsh, called Au-be-naw-be.

From the mouth of the Grand Calumet River the trail follows for the most part the immediate beach of Lake Michigan to Fort Dearborn.

#### The Vincennes (or Hubbard's) Trace Transect

Contrasted with the forest trails on the Indiana side of the Calumet are the prairie trails on the Illinois side. The Vincennes Trace is representative of the latter type. Throughout almost its entire course it extends over prairie country.

Tracing the transect of the terrain and cover over its route, starting on the south, one observes that its course through Crete Township and for two miles into Bloom Township lies over typical rolling terminal moraine topography of well drained prairie. The trail may be regarded as the precursor of Illinois 1, a large part of the route proximating the course of the road.

Just before reaching the village of Bloom it crosses the famous old Sauk Trail. At Bloom it enters on ground moraine which extends slightly into Thornton Township. A small grove of timber is encountered in crossing Thorn Creek. One mile within Thornton Township it crosses sand ridges which on the landform map denote the Glenwood and Calumet beaches, here almost consolidated. Then there is a wet prairie for about two miles, which the surveyor notes is "very level, too wet—not fit for cultivation." This is the Lake Chicago Plain and a certain amount of poorly drained land is to be expected. The trail avoids most of the wet prairies by swinging to the left. Such a deflection is also necessary to avoid crossing the Little Calumet River—not once, but twice, because of its hairpin curve, and the unfordability of the river at this point.

At the south end of Blue Island the trail passes through a large Indian village (later site of the historic Rexford Tavern, 1835). It is the most important trail junction of the Calumet on the Illinois side. No less than seven prominent trail routes converge at or near this point.

From here the Vincennes Trace strikes out northeastward through Calumet Township over "rich level prairie" to the southeast corner of Lake Township. Here

<sup>22</sup> K. C. Swartz, "Institutional History of Lake County in the Last Century," *Indiana Magazine of History*, VI (1910): 160.

at 83rd Street is the site of the historic Kiles Tavern, a pioneer geographic landmark of the stagecoach days.

The Vincennes Trace then leads directly to Fort Dearborn. It follows a strip of white oak and black oak timber which by reference to the landform map is found to coincide exactly with a beach ridge sufficiently elevated to insure a dry path at all seasons.

#### INDIAN VILLAGES AND THEIR GEOGRAPHIC RELATION TO WHITE MAN'S SETTLEMENT

It is interesting to note an observation that "Indian towns were never located immediately upon a principal trail. It would be too conspicuous to an enemy."<sup>23</sup> The map of Pottawatomie occupancy (Fig. 1) gives just the opposite impression. This discrepancy may be resolved by reference to the fact (also recognized by the source quoted) that the Indian did not establish permanent settlements or occupy them permanently in the same way that white man does. Solon Robinson, a direct observer of Pottawatomie customs, points out that the "same family occupies perhaps a dozen different stops in a year. . . . In winter they generally select some romantically sheltered spot near a lake or stream. . . . In summer they reverse the order, camping on the highest knobs and most airy points on groves; sometimes, though rarely, planting a 'small patch' of corn."<sup>24</sup>

The fact remains that there were major Indian villages, minor Indian villages, and very temporary camp sites, and that at least the better known settlements were directly on trails or sufficiently close to them to make use of them. There were, of course, villages or encampments off the trails not shown on the map, but it is the prominence of the trail settlements and their connections with the subsequent white man's occupancy that is of primary concern.

Since the map shows the general nature of the habitat of each of the recorded settlements, and since the more prominent settlements along the major trails have already been commented upon in the previous section, it is only necessary to state a few generalizations on the Pottawatomie pattern of settlement.

First of all, it should be pointed out that the mapped data portray only an incomplete picture of settlement, as intimated above. Moreover, since there is not available for the Indiana side the kind of authenticated and detailed field data like those supplied by Scharf for the Cook County area, the areal pattern is not likely to be regionally comparable. Nonetheless, certain valid observations can be made with reference to the occupancy and its relation to the fundament.

1) The major villages are characteristically identified with the major trails, particularly the trail junctions (Merrillville, Blue Island). They also seem to be mostly found on the Illinois side, but since comparable map data for differentiating large and small villages on the Indiana side are not available, the writer classified most such settlements as small on the basis of fragmentary sources investigated.

2) Water sites feature the location of some settlements (Thornton, Hegewisch,

<sup>23</sup> Bowers, *op. cit.*, p. 94.

<sup>24</sup> Kellar *op. cit.*, p. 63.



South Chicago). Of these, the one at Thornton was most prominent and actually carried a name—"The Chicago." In fact, Scharf recognized it as the pre-eminent Indian village of the Calumet region, and observed that, together with the other two villages mentioned above, it could control canoe navigation of the Calumet River in its approach to Lake Michigan.<sup>25</sup>

Just as modern Calumet urban communities have suburban "satellites" rising on their periphery, giving a metropolitan aspect to this area, so the concentration of smaller Indian villages together with the larger ones in the Hyde Park-Thornton area produce a similar suggestion of an agglomerated Indian community.

No less interesting here seems to be the resemblance of the trail web to our present-day highway and railway net and their corresponding influences on the settlement pattern.

3) Wooded sites seem to have had almost a universal appeal, whether along the rim of the moraine next to the prairie country (Fig. 3, e), e.g., Worth, Westville; on beach-dune ridges (Fig. 3, q, v), e.g., Thornton, Hammond; or on prairie bordered inliers of the Lake Chicago or Kankakee plains (Fig. 3, a), e.g., Blue Island, Door Village.

4) It is doubtful whether Calumet Indian villages *per se* were directly instrumental in guiding white man's own selection of sites for urban settlement. But identification of the numerous Indian camp locations by present-day town and city names, as just given above and elsewhere in the paper, and as indicated in Figure 1, reveals an extraordinary coincidence in the two urban settlement patterns. That the presence of friendly Pottawatomies in some cases attracted the white man to their settlement sites is a possible psychological factor; however, it was unquestionably the Indian trail, and particularly the terminus and the junction of arterial trails that constituted the predominant aboriginal influence on the basic pattern of pioneer settlement. It is perhaps equally significant to observe that the same land, vegetation, and water features which attracted the Indian to specific sites, as noted above, operated in much the same way in the settlement planning of the pioneer.<sup>26</sup>

#### POTTAWATOMIE AND TRANSITION PIONEER ECONOMY

What was the economic geography like at this stage? As would be expected, life was primitive, but the primary forms of subsistence were well supplied. Ball, one of the most prolific writers of early local history of Lake County, thus observes: "Hundreds and hundreds of bushels (cranberries) were gathered and sent off in wagon load to the nearest markets [sometimes noted on original surveyors' plats (see Westchester Township, Porter County, Fig. 1)]. The Indian children, it is certain, could have had no lack of wild fruit in the summer and fall, from July 1st till frost came. As late as 1837 the two varieties of wild plums, the red and the yel-

<sup>25</sup> Albert F. Scharf, *Indian Villages of Chicago and Cook County*. Ms. in the library of the Chicago Historical Society: 1903? Part I.

<sup>26</sup> A study of this particular phase of Calumet settlement, virtually completed, has been designed as a sequel to the present paper.

low, were excellent in quality—the red very abundant; and of crabapples, although they were sour, yet large and nice, there was then no lack. There were nuts, too, in great abundance in the time of autumn—hazel nuts, hickory nuts, walnuts, white and black, and beech nuts. In the northeastern part, where the hard or rock maple trees were so large and of so dense a growth, 'thick woods,' the Indians in the spring time could make, which they did make, maple sugar, to sweeten their crab-apples and cranberries."<sup>27</sup>

A sugar camp, for example, is indicated in northern Jackson Township (Fig. 1). There were also the haw, crabapple, wild grapes, sassafras, and the pawpaw (Section 27, Jackson Township). Hazel is one of the few bush types of vegetation noted recurringly by the surveyors. It is associated with upland timber, most commonly on the Illinois side, as in Frankfort and Bloom townships.

Whereas the cranberry of the marshes was probably the most abundant fruit as noted above, there were many other berries in the marshes and on the variegated topography of the associated sand ridges and elsewhere as noted by early writers—huckleberries (low and bush), blackberries, strawberries, whortleberries, raspberries, roseberries, wintergreen berries, gooseberries, currants, and sand hill cherries.

The wild rice of the marshes most likely furnished an important item in the human diet. It certainly was also the chief attraction for the wild fowl for which the Calumet marshes and its great lakes were famous. In this respect the Calumet was very similar to the neighboring Kankakee marshes and lakes just across the moraine divide to the south.<sup>28</sup> Mr. Say of Major Long's Expedition, which passed through these parts in 1823, noted the following aquatic birds: "the mallard (*Anas boschas*), shoveller-duck (*A. clypeata*), blue-winged teal (*A. discors*), common merganser (*Mergus serrator*), common coot (*Fulica americana*), stellate heron or Indian hen (*Ardea minor*), etc. etc."<sup>29</sup>

The timber tracts and prairies also abounded in food animals, such as squirrels, wild turkeys, partridges, deer, quail, grouse, prairie chickens, and rabbits, and earlier, the buffalo and the elk. Buffalo and elk had apparently ceased to be an important food item shortly after the turn of the 18th century. "The whole of the eastern Illinois and western Indiana as far south as the Vermilion River was once a Pottawatomie domain . . . a great, grassy prairie. Here the buffalo roamed in countless numbers until 1790. In that year, the Indians say, a very deep snow, some four or five feet deep, covered the whole land. Then rain and freeze caused the top of the snow to become a glare of ice. During this time the Buffalo could find nothing to eat. He could not walk through the ice-covered snow and was too heavy to walk on top as did many other animals. In this condition the Buffalo perished from hunger or were killed by the Indians and predatory animals."<sup>30</sup>

<sup>27</sup> Ball, *op. cit.*, p. 17.

<sup>28</sup> Alfred H. Meyer, "The Kankakee 'Marsh' of Northern Indiana and Illinois," *Papers of the Michigan Academy of Science, Arts and Letters*, XXI (1935): 359-396.

<sup>29</sup> Milo Milton Quaife, (Compiler and Editor), *The Development of Chicago, 1674-1914* (Shown in a series of Contemporary Original Narratives). Chicago: 1916. p. 125.

<sup>30</sup> Winger, *op. cit.*, p. 58.

The marshes, wet prairies, and dry prairies provided excellent natural pasture and hay for grazing animals. Hay became one of the early settlers' chief commercial products. Indians and the first white settlers are generally supposed to have opened clearings in the forests for the cultivation of corn and other grains. But this apparently was not true for the Calumet region, where prairies, mixed with the forests, were available. The mapped data for Washington Township and neighboring township areas mentioned previously indicate this fact.

Indians as well as whites, however, did raise corn "more than is generally supposed" not only for their own use, but for the growing market for corn in the Lake Michigan area and points farther east. Together with fur it constituted the leading product in trade, detailed discussion of which is reserved for a later paper treatment.

In addition to corn, "The Pottawatomie raised beans, peas, squashes, tobacco, and melons."<sup>31</sup> Besides these vegetables their white neighbors cultivated "oats, buckwheat, turnips, and potatoes."<sup>32</sup>

The forests provided natural shelter and home building materials as well as food. "The timber which filled the native groves and bordered the streams consisted of the various varieties of oak, black walnut, hickory, elm, hard and soft maple, but-tonwood, and ironwood . . . most of which in a few years fell before the axe of the settler for the purpose of building log houses, rail fences, fire-wood, etc., and, as soon as saw-mills were built, for lumber."<sup>33</sup>

Such softwood timber as occurred in the Calumet was chiefly to be found in a strip along the lake, as indicated on the fundement map. Just how numerous the saw-log conifers were, which grew among the otherwise generally small pines and oaks, is not easy to determine. The present type of scrub cover does not suggest anything like an appreciable stocking of early merchantable timber, and one would hardly get the impression from the relatively few entries of pines in the surveyors' notes that saw-log pine or other conifer trees were very significant for building purposes. However, Major Long, on his expedition for the War Department, reported that in "some places" the pine (apparently white pine) "was very abundant."<sup>34</sup> And Solon Robinson, the earliest settler of Lake County and a most astute observer as indicated by his prolific writings which he left for posterity, reports that the land of northwest Lake County was "originally covered with a valuable growth of pine and cedar, which has been nearly all stript off to build up Chicago."<sup>35</sup>

According to survey notations and present day observation, the more important pine area was and still is the northeast Porter County region, (appropriately named Pine Township), and northern LaPorte County. Packard states that the sand

<sup>31</sup> W. Vernon Kietz, *The Indians of the Western Great Lakes, 1615-1760*. University of Michigan Press: 1940. p. 313.

<sup>32</sup> Kellar, *op. cit.*, II, p. 59.

<sup>33</sup> George H. Woodruff, et al., *The History of Will County, Ill.* Chicago: 1878. p. 227.

<sup>34</sup> Rollo B. Oglesbee and Albert Hale, *History of Michigan City, Indiana*. Edward J. Widdell: 1908. p. 63.

<sup>35</sup> Kellar, *op. cit.*, p. 80.

ridges of Michigan Township "were at one time covered with a fine growth of white pine timber, which has entirely disappeared, having been cut off for lumber."<sup>36</sup>

#### THE CALUMET FUR TRADE AND THE BAILLE HOMESTEAD HERITAGE

One of the most rewarding exploratory experiences today in the Calumet is the view of a geographic relict of the Pottawatomie days. On the secondary winding road northwest from Porter, linking US 12 and US 20 (former arterial Indian trails), and in a secluded timbered spot on the north bank of the Little Calumet River, one is startled at seeing a cluster of old log cabins which clearly belong to the occupancy of another epoch (Fig. 6b). It is the Bailly homestead, the most geographically significant landmark of the Pottawatomie-French fur trade period. Here in 1822, Joseph Baille (anglicized to Bailly), a French fur trader, with an Indian squaw for his wife, built a home for his family, the first white settlement in the Calumet region.<sup>37</sup> Here he also operated the Calumet's leading trading post (sometimes referred to as "Little Fort").<sup>38</sup> Indians came as far as fifty miles to exchange their pelts for guns, knives, trinkets, and colored shawls and blankets.<sup>39</sup>

In terms of commercial geography, Bailly and his trading post may be said to have brought distinction to the Calumet region through the fur trading business in his day much like the Standard Oil refineries at Whiting and the U. S. Steel Corporation plants at Gary have brought distinction to the Calumet in our day.

Bailly's association with another prominent trader by the name of Alexander Robinson<sup>40</sup> brought him into contact with the largest fur-trading organization of that day—the American Fur Company, whose organizer and chief stockholder was John Jacob Astor, said to have amassed the greatest fortune of his day—\$30,000,000.<sup>41</sup>

Moreover, Bailly's fur-trading territory was one of the best. The far-flung Calumet marshes near the shoreline of Lake Michigan and along the Calumet rivers, and the neighboring Kankakee marshes just a few miles to the south of the moraine excelled in the trapping of beaver and muskrat. The intervening forested morainic

<sup>36</sup> Jasper Packard, *History of LaPorte County, Indiana*. S. E. Taylor and Co.: 1876. p. 82.

<sup>37</sup> Baileytown, a hamlet about a mile northwest on US 12, is reminiscent of the romantic plans Bailly had in platting his own city and port on Lake Michigan, which dream, however, was never realized.

<sup>38</sup> The earliest fur trading in the area dates back, of course, to the expeditions of Joliet and LaSalle through the head of Lake Michigan region. Tradition points to a trading post in LaSalle's day near the Indian trail junction and confluence of the Deep River and the Little Calumet River, a very strategic site. Then in 1785 a William Burnett is reported to have established a post on Trail Creek (site of Michigan City). The Vincennes Trail on the Illinois side of our area has also been called Hubbard's Trace, after one of the most enterprising traders of the region, G. S. Hubbard. In 1822 he established a post at Iroquois, just south of our area, exploiting the fur business of the Iroquois and Kankakee valleys and marketing his pelts at Fort Dearborn, the leading trading post of the Lake Michigan region.

<sup>39</sup> Bowers, et al., *op. cit.*, p. 79.

<sup>40</sup> The last of the principal chiefs of the Pottawatomies, named Chee-Chee-Bing-Way (Blinking Eyes), of mixed Indian, French, and English blood.

<sup>41</sup> Cannon, *op. cit.*, p. 62.

upland abounded in mink, otter, lynx, fox, wolf, and other valuable fur-bearing animals.

The regional position of the post also was advantageous by maintaining extra-regional contacts. Located on one of the chief arterial thoroughfares, "the settlement at Baileytown became widely known; travelers, traders, adventurers, missionaries, and Government officers made it their rendezvous. It was the leading place of assembly for religious exercises; it was an important center of trade; it was a place of safety in time of danger."<sup>42</sup>

No doubt the river site, aside from its charm, had some transportational utility, especially for local westward travel; however, the writer did not observe any reference to it in the general literature. At any rate, it would appear that the meandering Little Calumet, with its westward course paralleling Lake Michigan, would suggest a poor alternative route to that of shore line traffic on the lake only two miles directly north from the Bailly post. And so it was to this point that Bailly delivered his peltries by pack-horses. There the furs were loaded into thirty-foot boats and rowed by man power to Mackinac Island (Mich-il-i-mac-i-nac)<sup>43</sup> (Figs. 4 and 6e). For the Mackinac journey Bailly's "engages" most likely followed the east shore of the lake, a practice apparently conventional at the time. It was also the custom of the period to use sailing vessels or pirogues in the traffic with Mackinac.<sup>44</sup>

Mackinac at this time was the entrepot of the whole Northwest. "All the trade in supplies and goods on the one hand, and in furs and products of the Indian country on the other was in the hands of the parent establishment [Fig. 6f] or its numerous outposts scattered along the lakes Superior and Michigan, the Mississippi, or through still more distant regions."<sup>45</sup> From Mackinac the pelts were transported to Quebec or Montreal and thence to Europe.

Because of the many irregularities in the private fur-trading business, particularly the demoralizing influence on the Indian resulting from the heavy liquor traffic, Congress attempted to regulate the Indian trade. All traders had to be licensed and Indian agents were appointed who were to establish specific posts for Indian trade.

Fort Dearborn (Chicago), which had figured so prominently in the fur-trading business ever since the French *voyageurs* entered the area, was selected by the government as one of the posts (Fig. 6d). In 1805 it became the government "agency" headquarters and "factory" for the various posts established throughout the Lake Michigan and neighboring areas. "The former had charge of relations with the Pottawatomie, Sauk, Fox, Chippewa, Ottawa, and Miami. . . . The agency distributed presents periodically, held councils with the chiefs, and served as the civil arm of the government in peace-time relations with the local tribes. The factory,

<sup>42</sup> W. A. Goodspeed and Charles Blanchard, *Counties of Porter and Lake, Indiana; Historical and Biographical*. Chicago: 1882. p. 16.

<sup>43</sup> Cannon, *op. cit.*, p. 69.

<sup>44</sup> Oglesbee, *op. cit.*, p. 52.

<sup>45</sup> Mrs. John H. Kinzie, "The Early Day of the Northwest." *The Carlton Club* (Chicago, 1901): 6.

on the other hand, was one of a number of government trading houses established in the West as a means of breaking British control of the Indian trade, weakening English influence among the tribes, and cultivating friendly relations with the Indians by supplying their wants with superior goods at reasonable prices."<sup>46</sup>

The government plan designed to destroy the influence of the private trader, however, does not seem to have been very effective. Thus Buck reports that persons familiar with the situation regarded the factories too few in number and too scattered—only four in the Northwest (at Chicago, Green Bay, Prairie du Chien and Fort Edwards). On the other hand, the private trader, as will be noted from this account, contacted the Indian directly in their own hunting grounds.<sup>47</sup>

#### SIGNIFICANT RELICT FORMS OF CALUMET POLITICAL GEOGRAPHY

Another present day heritage of Pottawatomie occupancy is the Indian Boundary Line entering the area in Green Garden Township and extending diagonally northeast to the mouth of the Grand Calumet River (Figs. 1 and 2). A similar diagonal line runs parallel to this on the northwest side of the Des Plaines River. Title to the twenty-mile strip between the lines was secured by the government from the Indians in 1816 for the purpose of building a ship canal from Lake Michigan to the Illinois River. The first suggestion for such a water link (the antecedent of the modern Illinois and Michigan Canal) was made during our second war with Great Britain (1812-14), from which experience it was realized how valuable such a canal might be.<sup>48</sup>

The geographic import of this strategic proposal has long been commonly recognized, but what is less generally known is the discordant land survey relationships that exist on either side of the Indian Boundary Line, and which have disconcerted surveyors ever since. On Figures 1 and 2, it can be observed that the township lines on either side of the Indian diagonal line do not coincide. The land surveys were made independently from the east and the west (in the 1830's), subsequent to the canal land survey (1821-22). This has resulted in discrepant section lines, confusing property boundaries, and irregular road "jogs."<sup>49</sup>

Original land surveys in preparing a country for white man's occupancy seem to have had their own peculiar way of affecting such settlement. When Bailly settled in what is now Porter County he thought he was actually locating in Michigan territory.<sup>50</sup> And though Indiana was admitted into the Union in 1816, there was confusion and conflict over its northern boundary as late as 1837. When Michigan was admitted to the Union, it "surrendered" its claims to the controverted territory in exchange for the Northern Peninsula which the government offered as

<sup>46</sup> Bessie Louise Pierce, *A History of Chicago, 1848-1871*, II. p. 17.

<sup>47</sup> Solon Justus Buck, *Illinois in 1818*. Springfield: 1917. p. 19.

<sup>48</sup> Woodruff, et. al., *op. cit.*, pp. 298-299.

<sup>49</sup> See, for example, the northwest corner of Section 33, Frankfort Township, Chicago Areal Geology Map-Frankfort, U. S. Geologic Survey, Washington, D. C., 1930-32.

<sup>50</sup> John O. Bowers, "The Old Bailly Homestead," paper in Gary City Library, probably read before the Gary Historical Society, (1922): 4.



a "consolation" award. One writer observes it would require volumes to tell the boundary story, involving as it does the political organization of the Northwest Territory, and of the states of Ohio ("Toledo War"), Illinois, Indiana, Michigan, and Wisconsin.<sup>51, 52, 53, 54, 55</sup> Suffice it here to point to the problem and its salient geographic concern to northern Indiana, including our area.

The line on the fundament map (Fig. 1) extending through the southernmost point of Lake Michigan is the east-west state dividing line provided for by the Ordinance of 1787 for the division of the Northwest Territory. For the interstate relations of this line see Figure 4. This line was later claimed by Michigan as her southern boundary. But the Enabling Act for the admission of Indiana as a state provided for a line 10 miles north of the old one.<sup>56</sup>

This latter line was defended by the then governor of Indiana, Noah Noble, on the grounds that Indiana would otherwise lose not only a ten-mile strip of one of "the fairest and most desirable portions of her territory," but would also be "entirely excluded from any access to the lake, except through a foreign jurisdiction."<sup>57</sup>

Into this Calumet section and the neighboring area to the south migrated the first group of white settlers (1829) and established the first county government at LaPorte (1830). This fact together with the charting of the first mail route through the Calumet from Chicago to Detroit in 1831, the formal relinquishment of the Indian lands by the Pottawatomie in 1832, and the founding of the first lake port the same year at Michigan City mark the transition of the Pottawatomie to the Pioneer period.

#### SUMMARY

This investigation of the historical geography of one of the present-day most outstanding industrial regions of the world is based on two primary objectives: first, to reconstruct, within the limits of the research data and personal resources, the fundament of the natural heritage of the Calumet and recapture some of the forms of Indian-French occupance significant in a geographic interpretation of the history of the period; second, to organize and present the data of this period in such a way as to show how the present occupance forms are related to the past.

The chief problem in a study of this type is to translate the data or literary works

<sup>51</sup> Bowers, *op. cit.*

<sup>52</sup> R. D. Hammons, Original Government Surveys of Gary (a typewritten letter in Gary Library, May 31, 1934).

<sup>53</sup> Willard V. Way, "The Facts and Historical Events of the Toledo War of 1835," *The Magazine of History*, XL (1930): 8-11.

<sup>54</sup> For one of the most comprehensive accounts of this singular episode in the political geography of our area see Mrs. Frank J. Seehan, "The Northern Boundary of Indiana," *Indiana Historical Society*, VIII, No. 6.

<sup>55</sup> Also Harold Lindley (Chairman, Committee), *History of the Ordinance of 1787 and the Old Northwest Territory*. Marietta, Ohio: 1937.

<sup>56</sup> Incidentally, this contested strip was originally purchased (1828) by the Federal government from the Pottawatomie.

<sup>57</sup> The Historical Records Survey, Works Progress Administration, No. 46, *Inventory of the County Archives of Indiana (LaPorte)*, Indianapolis: 1939.

of non-geographers into the concepts and the vernacular of the geographer. The attempt to do this in cartographic form has proved particularly trying at times—to fill a gap here and an indecisive detail there to make for contiguous expression. Fortunately, the original landscape data of the early government surveyor, though still in sketchy and fragmentary form, could be pieced together to give a basic pattern into which to fit or adapt regional or local commentary material from contemporary or near contemporary sources, as indicated in various footnote references.

The “synthetic” silhouette sketch accompanying this paper may be said geographically to summarize the results of these efforts. From it one can observe both the vertical and horizontal geographic relationships of the basic natural and occupation forms. This generalized panorama, moreover, suggests how the varied landscapes either handicapped or favored subsequent white man's settlement. The thick timber on the major part of the moraine, the extensive marshes and wet prairies on the lake plain, and the sandy “barrens” of the far-flung ancient beach deposits and modern dunes help to explain the singularly belated pioneer settlement of this otherwise strategically located region.

How the incoming frontiersman reacted to this environment and impressed his own cultural pattern upon it is the theme of a subsequent paper.

#### ACKNOWLEDGMENTS

Pursuit of a study of this type calls for contact with many sources in addition to cultivating an intimate familiarity with the area. Accordingly, visits have been made to various libraries for obtaining as much original and secondary material as was available to compose a unified stage and story treatment of the aboriginal landscape of our region.

References have been consulted in the library of the Chicago Historical Society, the library of the University of Chicago, the Newberry Library, the Chicago Public Library, the Gary City Library, the Indiana State Library, and the Library of Congress at Washington.

Plat data were transcribed in the Capitol buildings at Indianapolis, Indiana, and at Springfield, Illinois, where duplicate sets of the original government land survey plats for the respective states are on file.

For the courtesies, privileges, and assistance extended by the personnel of these various agencies, the writer feels deeply indebted. He further wishes to acknowledge the secretarial assistance of Mrs. A. H. Meyer while working in the statehouses mentioned and in the Library of Congress.

And finally, the writer wishes to express his appreciation to the Indiana Academy of Science and the Michigan Academy of Science, Arts and Letters for their research grants in partial support of this project.

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ABSTRACTS OF PAPERS PRESENTED AT THE 50TH  
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(CONCLUDED)

N. J. G. POUNDS—*The Paris Basin in the Ninth Century: A Study of the Geography of Abbot Irminon's Polyptyque*

The only documents which give a comprehensive view of the geography of Europe during the early middle ages are the *polyptyques* or surveys prepared by the greater feudal landowners. Largest and most valuable of these is Domesday Book, but the *polyptyques* compiled by French monasteries in the ninth century can be made to throw a great deal of light on the geography of this formative period in French history.

The survey which Irminon made of the lands of the Abbey of Saint-Germain des Prés is examined. The possessions were grouped into fiefs, and the survey of twenty-five of these survives, located mainly in the Seine valley near Paris, in Beauce and in Perche. The survey suggests a high degree of nucleation in the settlement pattern in the *limon*-covered areas to the east, but a greater dispersion on the soils deriving from residual clay to the west.

There is a large body of material on land-use and crops. About 95 per cent of the land described, woodland excepted, was under the plough; meadow, vineyard, and pasture made up the remainder. Most of the cultivated grain was spelt; wheat, oats, and rye were relatively unimportant. Woodland was a major asset. Quite apart from its value as a source of lumber for building and fuel, it provided a very rough fodder for cattle and pannage for swine. Most areas of woodland were measured in terms of the number of swine they could support.

Vineyards were relatively extensive in areas which now support none. There is reason to suppose that they did more than supply the local demand for wine. Evidence in the *polyptyque* and elsewhere points to a very considerable trade in wine. Vineyards were located not where soil and climate would suggest, but where the transport of the surplus wine was most easy.

The *polyptyque* witnesses to a large rural population. In some areas this was almost as large in 800 A. D. as it was a thousand years later. It might almost be said that, on this evidence, the increase in the intervening years was wholly urban. The population was probably increasing at this time. There is abundant evidence of the formation of new rural settlements as well as of the planting of fresh vineyards, and even of reafforestation. The ninth century was, despite views often expressed to the contrary, a period when the cultural landscape of northern France was in process of vigorous change and development.

MERLE PRUNTY, JR.—*The Renaissance of the Southern Plantation*

Certain outstanding students of the South have concluded that the southern plantations disappeared at the close of the Civil War. Among these, Professor U. B. Phillips has stated that the plantation system "only survives in a few fragments . . . and can now be studied in the main only in documents." The landholdings which supported the plantations did not disintegrate during reconstruction, and thus emerges the general thesis that the land factor in regard to the plantations has been overlooked by students of the South. It is hypothesized that the plantation landholding has provided a spatial framework, relatively constant since antebellum times, which by its size has conditioned occupancy types developed within it, and which has supported three related land occupancy types in sequence. The three types are: 1) the antebellum plantation, 2) the fragmented plantation (of which two landscape sub-types are recognizable), and 3) the neo-plantation, now appearing in the South in association with farm mechanization and strong central management.

Survival of antebellum plantation units, and creation of other landholdings of similar size and nature is established through census data and documents. Inadequate census data on proprietorships, however, eliminates the possibility of analyzing gross distributions of plantation landholdings throughout the lower South. The hypothesis is examined through case studies of the land occupancy stages noted above, and the landscape characteristics of each stage are analyzed. Functional landscape changes from one occupancy stage to the next are analyzed in terms of shifts in labor conditions, in power used for cultivating and cultivating tools, and in central management. Major alterations now underway in plantation landscapes are noted in detail and their portent suggested where possible. Areas of predominance of the neo-plantation type are noted wherever field work substantiates their existence. Comparison of the landscape of the neo-plantation with that of antebellum times reveals many similarities. This condition, when coupled with analyses of cultivating systems on the two plantation types, leads to the conclusion that mechanization has enabled centralized management to perform many of the same functions on the landholding that were performed in antebellum times when all cultivating power was centrally controlled.

In regard to the general thesis, the plantation landholding did not "disappear" or "disintegrate" as many historical studies suggest. Our historian colleagues have been preoccupied with disappearance of a social institution—slavery—which, while closely associated with the original plantation type, was not exclusively so associated. Overlooked by the historians is the survival, indeed numerical growth, of plantation landholdings which today support the renaissance of a landscape similar to that of antebellum days. Also overlooked has been the survival of central management of these landholdings, which creates certain distinctive landscape attributes. Finally, since they exist and are of growing importance, the plantations may be studied now more effectively in the field than through documents.

ERWIN RAISZ—*The Changing Concept of Maps Through History*

There is no other item of human achievement which lets us pry so deeply into the spirit of past ages as the study of contemporaneous maps.

The primitive man can make maps drawn to scale in vertically-seen projection before he can write or make other records. The ability to draw maps is an inborn quality of mankind.

The Greek map maker was primarily an astronomer. He was more concerned with the shape of the Earth, with the length of the degree, and projection than with topography. The Roman, however, saw nothing else in a map than a device which helped him in travel and administration of provinces.

The Medieval man was an introvert. His map reveals his inner picture of divine learning rather than the confusing outside world. The Renaissance man was an extrovert, but still an artist and did not hesitate, where topography fails to supplant it, with "elephants for want of towns."

The 17th century map is primarily a soldier's map with fortifications, battle scenes, and with opulent baroque cartouches showing over-dressed generals on fat prancing chargers. In the Age of Reason, the 18th century, the map is sober and exactness is the main virtue. The romanticism of the 19th century expressed itself in atlases with pictures of scenic wonders.

The Machine Age of the 20th century has perfect expression in the overlettered, assembly-line produced contour map, which resembled Mother Earth so little that the cartographer had a rude shock when he looked down from a plane. Our present attitude is a stage of uncertainty and groping for better cartography to bring the map closer to the country.

VICTOR ROTERUS—*Industrial Location and Community Development in Metropolitan Areas*

The manufacturing activity serving markets outside the urban area is a primary generator of urban growth. For most urban areas, the site and service requirements of manufacturing must be assured or provided if the area is to grow. Furthermore, the provision of industry's site and service needs, if approached from an over-all community point of view, holds the opportunity for directing future urban growth into more aesthetic, orderly, and efficient patterns. A vital tool in realizing these opportunities is the concept of the "organized" or "planned" industrial district.

An organized industrial district is a tract of land which is subdivided and developed (in its entirety or in installments) for a community of industries in accordance with a plan providing for streets, rail lead tracks, and installed—rather than promised—utilities prior to the sale of the constituent sites to prospective industrial occupants. As such, the plan for orderly development of the tract must provide for adequate control of the land and buildings through zoning and restrictions, with a view to protecting the investments of both developers of the district and the industries occupying the improved sites.

Such an organized district, or planned subdivision for industry, is a logical, man-

directed response to present day trends and conditions in the location of industry in metropolitan areas. Many types of industry are using horizontal-line production methods best housed in a land-consuming, one-story building. More employees are driving to work and parking their cars instead of using public transit—another factor arguing for more space in the plant site. These trends have forced industry to seek outlying sites in the metropolitan area where larger parcels of vacant land in single ownerships are available and where the land is priced by the acre rather than the square foot. Another factor of more recent cogency in inviting dispersion of industry is defense security.

Settlement in the outlying metropolitan area can be either thinly scattered over the entire landscape or can be limited to a few areas in the interests of developing compact communities each of which can support a full complement of utilities and services at reasonably good quality standards. In order to achieve the latter type of settlement of progressive occupancy of selected areas, the zoning tool has thus far been ineffective not only because of its absence in many instances, but also because of its very definite limitations. The organized industrial district provides a focal point for community planning in the outskirts of metropolitan areas which, with the zoning tool, offers at least a better chance of effecting orderly and efficient development by recognizing some of the primary forces of modern day settlement.

DONALD M. ROZNOWSKI—*Applied Geography in the Industrial Development Program of the New York State Department of Commerce*

That there is a great deal of common ground covered by industrial development and applied geography has now been recognized by most geographers and many others in industrial location work. Attracting new industry to New York State is one of the chief functions of the New York State Department of Commerce. The primary role of an applied geographer in such an agency is to search out all the facts affecting industrial location that have a geographic basis. The geographic variation of locational factors (such as industrial water supply, transportation facilities, labor availability, etc.) is significant in industrial development work. A manufacturing and distribution cost saving of as much as 10 per cent can sometimes be effected by virtue of proper geographic plant location. After these locational facts are gathered and evaluated, they are filed geographically until needed. When a prospect's plant requirements are received, these locational facts are synthesized in such a way as to convince him that there are industrial sites in New York State that fulfill all his requirements, including those on a regional, community, and site level.

This accumulation, analysis, and synthesis of facts that vary geographically carries beyond industrial location work into other phases of the Department's program such as mineral and agricultural product promotion, community and area development, and so forth. Still another of the statutory functions of the Department of Commerce is to act as a participating state agency in the many interstate commissions that have been entered into by New York State since World War II. These commissions are organized for the purpose of jointly promoting and guiding the sound economic development of specified areas. Examples are the Interstate Com-



mission on the Lake Champlain Basin (between New York State and Vermont) and the New England-New York Inter-Agency Committee (consisting of New York, the six New England States, and certain Federal agencies). For many of these commissions, the Department of Commerce acts as the depository for data developed through field survey and research accomplished. Most of this data is geographic in nature and is useful to the staffs of other State agencies.

Other duties involve the preparation of maps and charts for use in industrial and product promotion work, answering inquiries concerning natural resources of the State, and research into the locational aspects of rapid growth industries for the purpose of briefing field men prior to their making calls on firms in those industries.

There appear to be expanding job opportunities for geographers in state governments, especially in their planning and development agencies. If the present trend of the Federal Government in returning to the States the responsibility for carrying out area development programs continues, then employment opportunities for geographers in State governments should expand considerably.

JOSEPH A. RUSSELL—*The Theory and Practice of Applied Geography*

Every businessman is functioning as a geographer when he makes decisions such as those concerning manufacturing or store location, but few geographers have devoted themselves to assisting the businessman to make *better* geographic decisions. Yet the increasing number of undergraduate and graduate students of geography makes it necessary that employment opportunities be available in fields other than government service and teaching. The papers of the Group Session on Applied Geography are intended to show a variety of ways in which geographers have employed their training in business and industry and to appraise the adequacy of the training of the contributors in preparing them for their work.

The practice of applied geography must be firmly grounded on established geographic theory, methodology, and fact. The concept that geography is concerned with the significance of differences and similarities that exist from place to place is directly translatable into problems of selecting industrial sites or retail outlets, analyzing product acceptability and market penetration, advertising campaigns, and the like. The applied geographer has a different audience than the academic geographer; he may use different kinds of facts, different media of presentation, and different tools of analysis; yet he is required to have the same research objectives if he is to establish the unique place of his profession in business practice.

An exploratory, genetic, and remedial study of certain aspects of passenger automobile sales is used to illustrate the use of the regional concept and sales *patterns* as a means of solving market penetration problems. This study demonstrates that differences and similarities in market penetration are distributed in orderly regional fashion, and that the factors that lead to successful or unsuccessful penetration can be identified and evaluated through the establishment of categories of areal association of market penetration facts with the physical, cultural, or psychological conditions that either generate or prevent sales. Analysis of areal associations leads to

the conclusion that the reasons for regional strength or weakness in sales of automobiles (at least) are regionally internal and result from one or both of two possible relationships between the commodity and *other* conditions within the region: 1) the *product* is either exceptionally well suited to various physical, economic, sociological, etc., conditions within the region or it is exceptionally poorly suited to these conditions; and 2) the *marketing organization*, including personnel, techniques, outlet network, and outlet site locations, is either exceptionally well or exceptionally poorly adapted to represent Company interests in that particular area. It is the function of the geographer to identify the other facts that regionalize in coincidence, correspondence, or even discordance with the "automobile region" as the first step of further study directed toward establishing a genetic relationship between the sales characteristic and the *possible* causative or preventative facts.

RICHARD J. RUSSELL—*Alluvial Morphology of Anatolian Rivers*

Faulting has developed many Anatolian valleys, but their lower parts are alike in having been alluvially drowned during the Recent rise in sea level. The advance of alluvial fill into estuarine valley mouths has, in some cases, been sufficiently rapid to create lake-filled basins in tributary valleys. The Sakarya Delta illustrates the significance of under-water processes in creating distributary patterns, and in river-braiding generally. The Meander River demonstrates the complexity of depositional history and influence of active faulting along typical, alluviating flood plain. Rapid uplift and karstic phenomena fail to overcome effects of alluvial drowning in Rugged Cilicia. In Flat Cilicia the Ceyhan, Seyhan, Tarsus, and other rivers have built a compound delta whose surface indicates a complex history of stream diversions and meanderings. In comparing Anatolian rivers with the Lower Mississippi, possibly the greatest point of contrast is the inability of smaller streams to create distinct meander belts.

PAUL A. SIPLE—*A Demonstration of the Mechanics of Polar Migration*

Many opponents to the concept of extensive migration of the earth's poles argue that the proponents fail to give a plausible mechanism for such movement and therefore claim the hypothesis to be untenable. Unfortunately, both factions have been oblivious to the fact that the mechanics of polar migration were described by Leonhard Euler two centuries ago and that George Darwin, 75 years ago, showed that the earth's poles could have shifted considerably, but dismissed the idea because the associated concept of continental drift was unacceptable to his geological colleagues. Non-mathematically trained earth scientists have failed to comprehend the mechanics of polar drift because of the scientific language barrier, because of the failure of the astromathematicians to transcribe their knowledge into common English descriptions, and because there is a dearth of simple demonstration models to illustrate the phenomenon.

By means of an unpivoted ball gyroscope and diagrams, the author of this paper illustrates polar migration on a small solid steel ball. The phenomenon takes place

when the ball is unbalanced by attached surface weights. The weights cause the formation of an effective secondary rotation which turns the body of the ball (on an axis of inertia through the mass center of the ball) in such a manner that the body of the ball passes through the axis of spin without changing the latter's orientation in space. The polar surface points of the axis of spin describe a cyclic motion about the fixed poles of the axis of inertia.

An unbalance causes an immediate response and the exospheric mass of an oblate spheroid minimizes, but does not eliminate, polar migration. Minute polar wandering presently exhibited by the earth is in consonance with the experimental model, for the earth reacts as a rigid body to instantaneous changes. Thus polar cyclic migration precedes slower isostatic readjustments which eliminate unbalances. Because the earth is in dynamic equilibrium, constantly changing its balance, the cyclic polar migration appears erratic and its average location must of necessity wander. The cumulative effect of the wandering may be sufficient in time to require readjustment of the geometry of the earth created by its centrifugal force. This periodic readjustment would account for the known wide-spread orogenic movements throughout geological history, and latitude changes would account for periodic sea level variations.

Temporary unbalances preceding isostatic adjustment must have been greater at times in the past than any currently occurring. Pleistocene glaciation probably caused excessive polar migration. Although polar migration does not necessarily depend upon great unbalances, the cataclysmic events of the past suggest that such may have occurred.

#### H. T. U. SMITH—*Analysis of Dune Areas for Geographical Purposes*

Dune topography is widespread in arid and semiarid regions, and in coastal areas of humid regions. Correct analysis of such areas is essential for land-utilization studies, engineering operations, and military planning. Such analysis may be based on field observation, contour maps of suitable scale and contour interval, and air photos, the latter being particularly helpful. Attention is directed primarily to the following factors:

- 1) Individual dune forms. Although displaying almost endless diversity in detail, most dune forms may be considered as variations and modifications of certain basic types: attached dunes, barchans, ridged dunes (longitudinal and transverse), upsilonal dunes (U-, V-, and Y-shaped), and blowouts. Multiple forms are produced by crowding and fusion of unit forms, composite forms are generated by the superposition of similar forms of different types of forms.

- 2) The dune pattern. This represents the aggregate effect of more or less systematic repetition of unit forms over a given area. It is governed by the spacing, orientation, and interconnections of unit forms. In some places, complex patterns are developed by superposition of one type of pattern on another.

- 3) Surface condition. This has to do with the presence or absence of vegetation and/or soil, which determine the state of stability or instability of the dune. This

factor is of especial importance in the utilization of dune areas for agricultural or other purposes, and is a function of climate, time, material, and dune history.

4) Drainage. This may be of subsurface or surface type, and the latter may be either inclosed or through-going. In the case of inclosed surface drainage, lakes and marshes are common.

ARTHUR N. STRAHLER—*Dimensional Analysis in Quantitative Terrain Descriptions*

Measurements of the form elements of landscapes are essential if quantitative (mathematical) relationships are to be established between landforms and such human activities and institutions as they influence, or between landforms and such other physical-geographical elements as soils, climate, and native vegetation. The geographer who studies these problems has much to gain by borrowing basic empirical methods from physics and the engineering sciences. Of particular value are the methods of dimensional analysis used in fluid mechanics and hydraulics. Applied to quantitative geomorphic studies, dimensional analysis provides a sound geometrical basis, which can be extended into analysis of geomorphic processes if desired.

Form elements of fluvially-dissected landmasses are analyzed according to dimension. Such measures as stream length, relief, length of overland flow, and perimeter have the dimension of length ( $L$ ). Drainage density, texture ratio, and curvature of profile have an inverse length dimension ( $L^{-1}$ ). Areal measures and volumes have the dimensions of length squared ( $L^2$ ) and length cubed ( $L^3$ ) respectively. Dimensionless numbers include stream order number, azimuth, and angle of ground and channel slope. Combinations of dimensional elements produce dimensionless numbers such as stream length ratio, basin circularity ratio, ruggedness index, and hypsometric integral, which provide descriptive indices of the terrain irrespective of scale.

Complete geometrical similarity of landforms in two regions exists when all corresponding linear dimensions are in the same scale ratio, and all corresponding dimensionless numbers are the same. As an illustration, approximate similarity is established between small areas of mountainous terrain in the Verdugo Hills, California, and the Great Smoky Mountains, North Carolina. These two regions have close dimensional similarity of planimetric forms, but differ somewhat in vertical dimensions (slope and relief).

H. C. S. THOM—*The Analytical Foundations of Climatology*

The science of climatology is a branch of meteorology which arose through the recognition of stability in weather fluctuations not predictable on the conditions furnished by a strictly physical analysis. An examination of climatological data series shows that a close representation of such series may be made by a random series of numbers or a random variable. The calculus of the random variable then leads to models for climatological analysis which are in acceptable agreement with observation. A climate may then be defined as a statistical population of weather

conditions. These notions furnish the basis for climatological prediction which is a special case of synoptic prediction or weather forecasting.

C. W. THORNTHWAIT—*Topoclimatology*

Topoclimatology is the study of local climates. It makes use of the data of both micrometeorology and microclimatology and employs methods of field study developed by geologists and soil surveyors. It undertakes to determine the various influences on the heat, moisture, and momentum exchange between the earth's surface and the atmosphere. The end product of topoclimatology is an imposing series of maps showing the geographical variation of such edaphic factors as the color, apparent density, heat capacity, moisture content, and permeability of the soil; the characteristics of the vegetation cover and the albedo and roughness of the surface as well as its position, exposure, and aspect.

EDWARD L. ULLMAN—*Geography as Spatial Interaction*

Spatial interaction focuses on circulation and the connections between areas rather than on the nature of areas themselves, although of fundamental importance in explaining the latter. It is closely allied to the concept of situation in geography.

Measurement of actual interaction is difficult because of the sparsity of quantitative data on origin, destination, route, and direction of flows of goods, energy, people, or messages. It is often desirable, therefore, to check interaction on the basis of results, such as location of factories, cities, or trade areas. Many of the assumed interactions or interrelations in geography, however, are modified when actual measures are obtained; yet, no one measure serves for all interactions; people, goods, and messages may not move in like patterns.

A system for explaining interaction can be based on: 1) *complementarity* of regions, a function of areal differentiation promoting spatial interaction, and 2) *distance* between areas measured in real terms.

A simple form of such a system is a general gravity of interaction model which is surprisingly useful in describing many relations where degree of interaction is *directly* proportionate to the population or some other measure of volume in two interacting areas and *inversely* proportionate to the distance (or distance to some exponent) apart of two areas.

In considering many interactions, however, this simple formula is useless. Thus few forest products move from the Pacific Northwest to the South because both areas produce forest products. Earlier, little or no lumber moved from the Pacific Northwest to the markets of the interior northeast because the Great Lakes area provided an intervening source. This presumably is a manifestation of Stouffer's law of intervening opportunity, a fundamental feature of spatial interaction.

Mere differences between areas do not promote interaction; specific complementarity is required; subtropical Brazil and Colombia ship coffee to the U.S., whereas Ceylon and India ship tea to England and other subtropical areas ship little to either.

The similarities of two areas also promote certain types of interaction. Florida and California exchange few oranges yet each might provide a market for specific fruit farming equipment developed in one of the states; economies of scale might favor just one specialized plant for the two states and thus promote interchange.

In social and political affairs similarities presumably promote social interaction and cohesion more than differences do, although even in this sphere a complementary relationship may promote ties more than a competitive one.

In considering distance relationships, political control of areas and boundaries provide major distorting factors, as political geographers have noted. Examples of other factors include: 1) direction of movement, often unbalanced (a corollary of actual complementarity?); 2) provision of transportation facilities and rate structures which create low rates to points served and thus tend to accentuate and perpetuate areal differentiation based on initial specialized advantages promoting volume flows; 3) other characteristics of rate structures which favor end production points rather than midpoints between raw materials and markets because of the cost of an extra unloading at midpoints and the decreasing cost per mile of moving long distances; 4) length of haul and barrier-crossing ability of different types of transport and changes in transport technology promoting certain types of flows and changing distance relationships; 5) types of milieu within which interaction occurs: intra-urban areas with heavy passenger flows, and extra-urban areas with heavy commodity flows; ocean realms in which some cultures possess sea skills as in Greece, England, or Polynesia and continental realms where some cultures exhibit great overland mobility as the Mongols or Kazaks; 6) relations under war conditions which may be quite different from peacetime, as use of air power indicates; 7) effect of natural barriers; in some cases a mountain range may impede the process of interaction but also promote the base for interaction by differentiating areas on either side of the range or in producing differentiation within the mountains resulting in transhumance or the production of minerals.

In practice the facets noted above and others are intermingled in simple or complex combinations to produce specific interaction systems resulting in the interaction pattern of the United States which is analyzed.

MELVIN R. WALSH—*An Analysis of the Harvey, Illinois, Female Labor Market*

Among the many factors to be considered when locating economic activity are the costs of assembling raw materials, of processing, and of distributing the finished product. The cost of processing became evermore important to business as the high levels reached by the United States economy during 1953 brought with them the most competitive labor market since World War II. In a service industry such as the telephone industry, labor costs are a far bigger part of the operational budget than for many other industries, and so fluctuations in labor rates are correspondingly more important. Government regulation of the market price of this particular service placed this industry in a less advantageous position from which to deal with the increasing wage rates than was true for most other industries.



The Illinois Bell Telephone Company had to meet this problem as it affected the female labor force at three large accounting offices in Chicago, Illinois. It did this by studying the possibility of relocating these offices in what was believed to be the less competitive labor markets of the satellite urban centers in the Chicago Metropolitan Area. Once this decision was reached only a very short time was allowed for the completion of the comparative reports between which the final selection would be made. The resulting studies, of which this is one, contain numerous examples of geographical techniques being used in arriving at a quick solution to a business problem.

The female labor market area centered on Harvey, Illinois, was selected for study, as it was believed that the needed female labor might be found there as a complementary labor force. The area was widely known as an industrial center employing mainly men. This would mean that probably many of the employable female family members would not be engaged in suitable employment in the area.

In order to delimit the exact area for study, extensive use was made of interviews and of publications by government agencies and business associations.

As part of the investigation to establish just what the local employment opportunity was for women, the opportunities to be found in retail trade were examined. A comparison was made between the per capita retail trade in the Harvey Labor Market Area as compared to an average for other areas of a similar size. Reports on other possible sites were prepared according to the same outline and method of presentation. This enabled management to make the needed comparisons point by point between the areas under consideration.

In order for management better to understand the character of the area much of the information was presented in map form. The maps covered location and mileage, size, labor boundaries, growth of the area, and the future female labor market.

IVAN J. WARREN—*Summary of the Group Session on Applied Geography and Comments on Training for Work in Business and Industry*

It is the objective of this paper to present the combined views of the members of the group session on applied geography with special reference to college academic training, and specifically to course work in geography.

To the majority of executive business men today, the application of geography to business problems is often an entirely new and as yet unproven proposal. The need for greater public relations work in geography, in educating leaders and employers in business as to what applied geography is and how it can work in performing a specific job, appears to be one of the most important problems faced by the profession if it wishes to have the field recognized and accepted as a business practice.

Those of us who are now doing applied geographic work feel that training in urban geography, economic geography, regional geography of the United States, marketing geography, map and areal photo interpretation, area analysis and land use, market research, and statistics, are some of the most valuable courses which we have had as graduate students that have aided us the most in our present positions.

On the other hand, most of us feel that we would have benefited by survey courses in introductory engineering, industrial real estate, accounting, and business finance.

It is our suggestion that more course work at graduate level be offered in specific business problems. These studies should bear a closer resemblance to the problems encountered in business. For example, why not give assignments for a research project that would have to be completed in two or three days? An academic research problem for which there is no limit on time (other than at the end of the semester) or on source materials bear little relationship to most applied business problems.

We feel that more experience, through research projects, in working in interdisciplinary groups of two or more on a common problem would be valuable. It is further suggested that departments of geography solicit business firms for research problems that could be undertaken by graduate students in seminars to the mutual benefit of the student and the business firm.

An exchange of information and experience between industry and education was recently undertaken by the Chesapeake and Ohio Railway Company. During the summer of 1953 four graduate students, three of whom are geography majors, were employed by the railroad's Industrial Development Department to make field surveys and written reports on potential industrial sites in communities served by the Company.

This summer student program proved especially useful to the Company in that industrial research files were expanded with current information on several communities. At the same time, the summer student-employees were not only being well-compensated for their efforts, but they were acquiring an insight into the problems of the railroad's Industrial Development Department.

As the students who chose to become business geographers are almost entirely advised, guided, and taught by professors of geography, it is essential that the professors establish and maintain a strong liaison between teaching and business. Geography professors should understand the specific business problems which geographers can investigate and study—this can best be accomplished through first-hand business contacts between professors and business executives.

The need for and the opportunity for geographers in business is great and stands as a challenge not only to the student of geography, but to the professors as well.

JOHN C. WEAVER—*Isotope and Compound: A Framework for Agricultural Geography*

The central concern espoused is that of precise and objective measurement and pattern definition among the individual features and combinations of features of agricultural production as physical entities and economically active phenomena. The vital question is raised as to whether agricultural geographers have not been guilty of failing to attain adequate foundation levels of descriptive perception, before, in too great haste, seeking interpretative understanding.

In agricultural geography, as in much of geography at large, ours is a young endeavor, and our desire for the early attainment of recognized academic respectability is understandably urgent. But in our overanxiety to gain quick results that can be called whole, we must be on guard lest our output be by quality inadequate or by size insignificant. Over the half century that spans the life of this association, shortages of research man-hours and inadequate financial support have tended to induce superficiality with respect to large topics and areas, and depth without adequate correlative frames of reference with respect to small topics and areas.

We need to develop a new frame of mind and a new array of effective techniques leading toward sound indices of inventory and descriptive principles; indices and principles fit to function in broad realms of applicability, and to yield strictly comparable results. This is a special plea for a better statistical methodology. Not a borrowed methodology, developed in another field for essentially non-geographic purposes, but new statistical systems of basic theoretical design to match and solve our own specific problems. We must develop techniques that will provide us not only with new fundamental insights, but also with procedures susceptible both of precise repetition and specific interpretation.

We should accept the premise of the chemist that the material substance with which we deal, is by nature reducible to component elements, and even isotope variants of those elements. These factors need to be isolated and carefully measured, that they may be known, and known for what they are. On a broad foundation of such character the work of many can build and grow together toward an ultimately cohesive and satisfying goal. Really substantial progress never can be gained by individual workers pressing unrelated advances, always from the starting line.

Recognizedly at the point of element measurement, the analogy between our problems and those of the chemist must not be pushed too far. The chemist has the advantage being able to measure such features of his elements as weight and reaction in single planes of reference. Cobalt is cobalt in Wyoming or Pennsylvania; cobalt is cobalt in 1954 or 1854. Of our elements this can not be true, and we are compelled to make our measurements in the double dimensions of space and time. Clearly crop or livestock elements, whatever they may be, will vary in their land occupancy strength, their production volume and quality, their value, and their place in the total economy, depending upon the nature of their geographical situation. And further, such measured determinants as can be established in space, are not stable with reference to time. It is to be freely admitted that a host of baffling problems are introduced by these variable factors of space and time dimensions, but both are measurable, and, in that knowledge we should view them as complications to be overcome and not as omens of certain defeat.

We might with justification carry the broad analogy with chemistry a rung or two farther up the ladder, beyond the element and isotope. Even as the chemist identifies and describes structures of combination among his elements, so must we. Though perhaps somewhat hazy as to precisely what our elements and their characteristics may be, we are well aware that they occur not in isolation but rather in

combinational association. In his hierarchy of arrangement, the chemist recognizes the radical, a functional group of atoms that behave as a unit, and the compound, a specific substance formed by the union of two or more elements or radicals in measurable proportions. Though the agricultural geographer has hardly begun to find them, it seems safe to assert that we likewise have functional groups of elements which tend to unit behavior, as well as more elaborate combinations of elements and radicals that are truly compounds.

If in sizable sections of the earth we could establish fully rounded functional unit radicals for crops, and could do likewise with livestock, and if leading us to our discovery of such radicals we had the guidance of a solid, measured identification and description of the multiplicity of existing elements and isotope variants, we would have attained an outpost from which with real confidence we could strike for the compound, the agricultural region. The long range job of description is enormous in its complexity, and demanding in the levels of accuracy required. How can it be considered inadequate within itself as a goal of achievement? How dare we face the distant frontier of interpretation without its accomplishment?

ROBERT L. WILLIAMS—*Visual Interpretation of Value Symbols on Maps*

The paper reports on a series of experiments undertaken to find out how people evaluate the four basic types of map symbols. The object of this project is to discover by a series of tests the best designs for basic symbols to make them convey desired meanings to the greatest number of people. The four groups of symbols being tested are: spot symbols, line symbols, overall pattern or tone symbols, and word symbols.

The testing will be in two phases. First the abstract symbols will be tested out of map context to establish specifications for their comparative shape, size, color, and tone. The second phase will be the testing of these symbols, drawn according to the specifications derived from phase one, on maps to see if the findings of phase one are valid when put to practical use.

We are now in the midst of the phase one testing. Whatever results are available by the time of the meetings will be reported.

The work is being done with the aid of the Office of Naval Research.

WILBUR ZELINSKY—*Generic Terms in the Place-Names of the Northeastern United States: An Approach to the Demarcation of Culture Areas*

The purpose of this paper is two-fold: first, to provide some general background for future work in the geography of generic terms in American place-names by surveying these terms broadly within the well-mapped and culturally diversified northeastern portion of the United States, and, second, to explore their relevance to the wider field of human geography by attempting to delineate general culture areas on the basis of generic place-terms. After a discussion of the inherent limitations of the data for such a study, the distributional patterns of some twenty odd major terms—as derived from the scanning of USGS and AMS large-scale topo-

graphic sheets—are presented by means of maps and the significance of each is discussed briefly. Although each term has its own distributional peculiarities, almost all fall into a few definite areal patterns. The synthesis of these patterns into a system of culture areas is attempted; and a set of three major regions is proposed—Greater New England, the Midland, and the South—each divided into an old colonial and a frontier sub-region. When the boundaries of these regions are compared to those established in earlier studies concerned with other cultural factors, a satisfactory degree of correlation is discovered.

LEONARD ZOBLER—*A Statistically Validated Method for the Delimitation of Geographic Regions*

Existing methods of delimiting geographic regions have not made use of statistical techniques to evaluate areal patterns. The organization of space into regions establishes an hypothesis which postulates that there is a relation between the regions and the distribution of selected phenomena. Sample data based on criteria different from those employed to establish the original boundary lines may be used to test the null hypothesis of regionalization for statistical significance.

Using the chi square test such an investigation was made of Salem County, New Jersey. Eight regions were set up based on geomorphic-geologic features. The over-all regional pattern was tested by sample soil data. The results were significant. However, when each region was tested against every other region two pairs did not exhibit significant differences. This may be interpreted to mean that such regions should be combined because the original delimitation procedure pointed out areas whose observed differences may have been due to chance.

Because the data used for testing may be physical or cultural, the method is applicable to a wide variety of regional problems in geography and would seem to open up a fruitful avenue of research.





